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AIR TRANSPORT ISSUE

AVIATION

The Oldest American Aeronautical Magazine

APRIL 5, 1926 **Issued Weekly** **PRICE 15 CENTS**

Men Responsible for the Air Mail Development. Harry S. New, Postmaster General (center) and W. Irving Glover, 2nd Asst. Postmaster General.

(c) Harris and Ewing

VOLUME XX

NUMBER 14

SPECIAL FEATURES

HON. W. IRVING GLOVER ON AIR MAIL SERVICE

CONTRACT AIR MAIL SERVICES

FLYING FIELD EQUIPMENT FOR AIR TRANSPORT

GARDNER PUBLISHING CO., INC.
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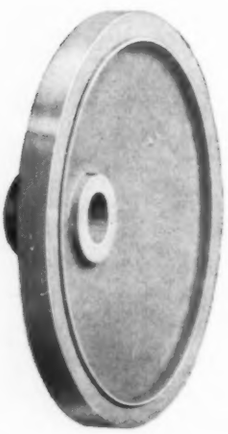

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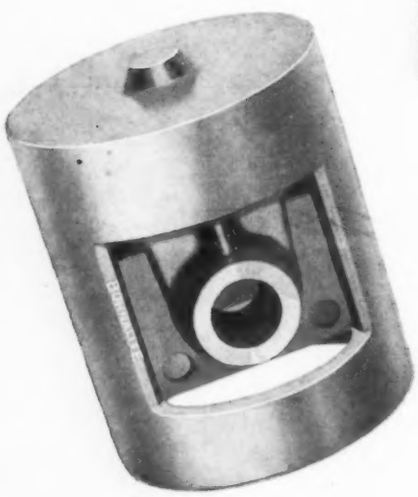

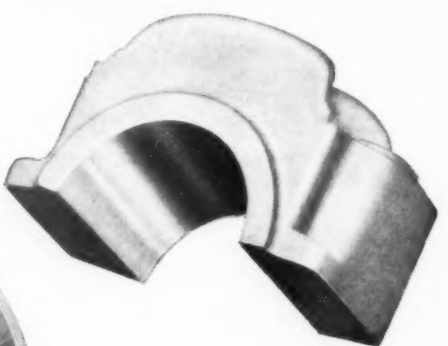

Thrills

MANY motorists make a practice of swooping down hills at high speed, dashing across railroad crossings in front of oncoming trains, or swinging around curves at forty miles an hour "just for the thrill of it." The newspaper reports of automobile fatalities tell the consequences.

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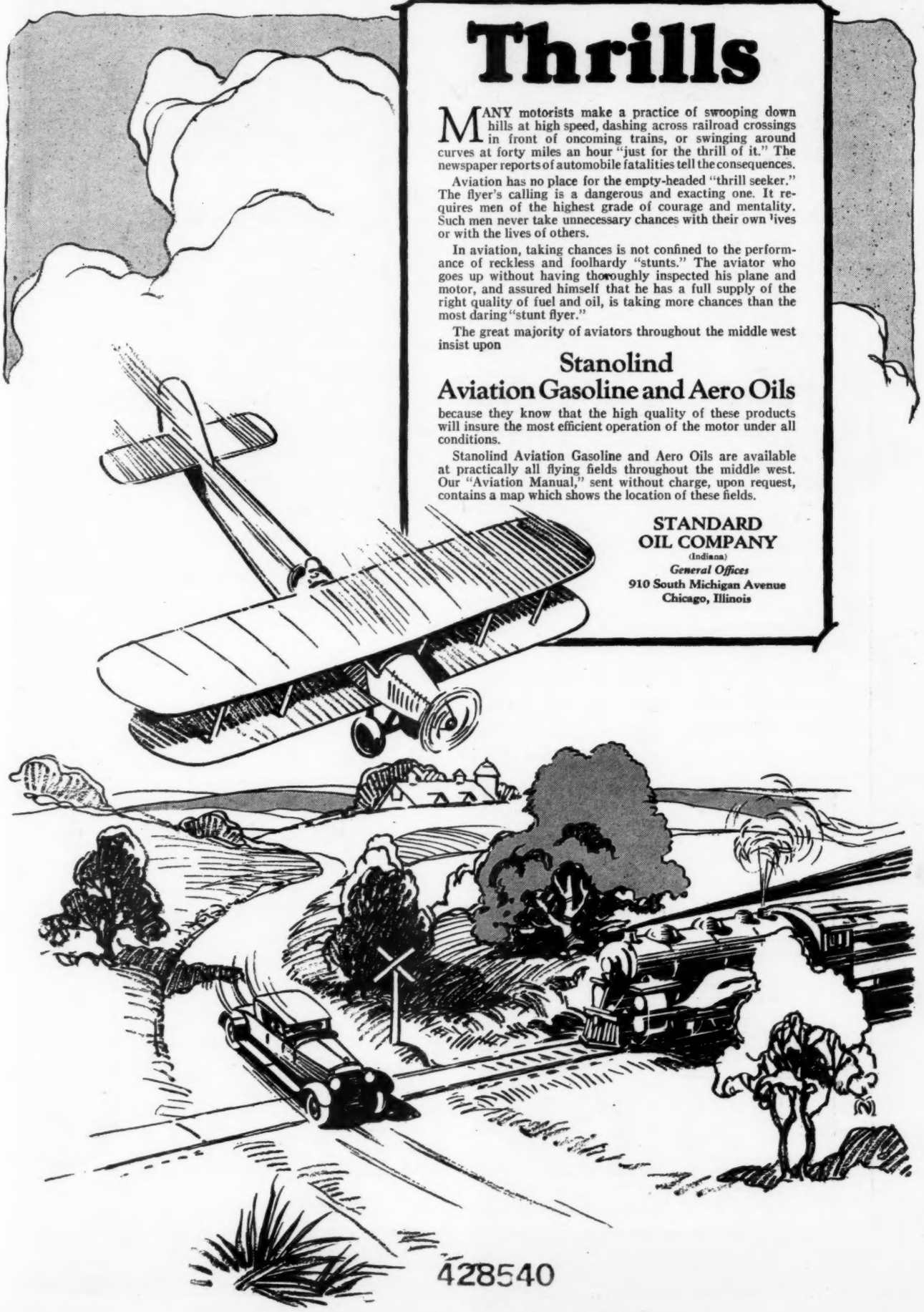

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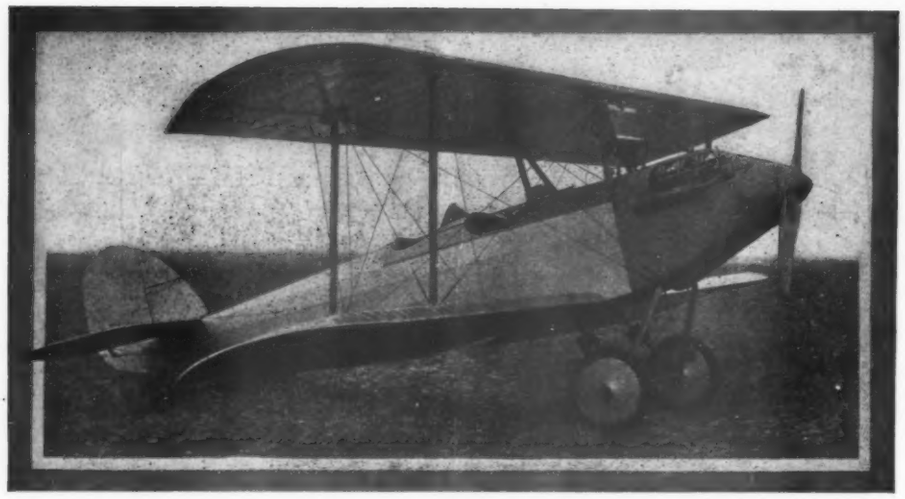

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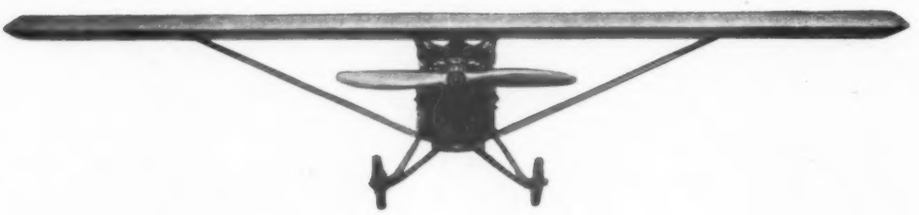

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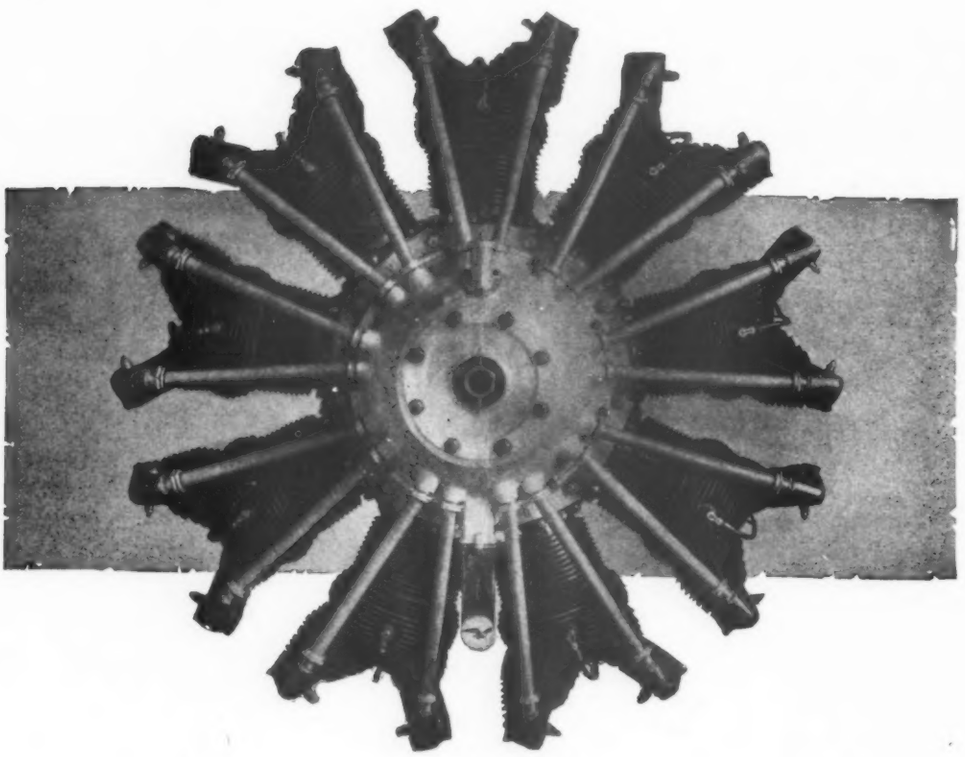

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APRIL 5, 1926

AVIATION

VOL. XX. NO. 14

Published every Monday

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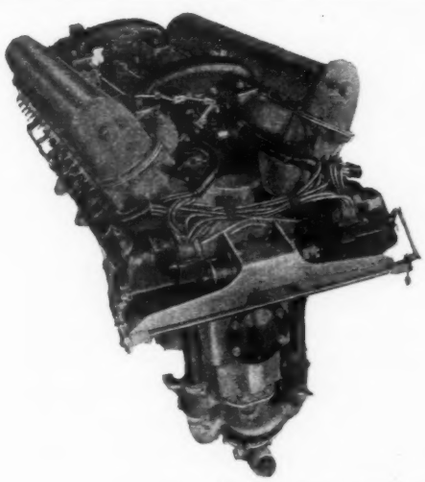

The Packard Model 1500 which, in a recent Navy test, ran 50 hours at full throttle, developing 615 B.H.P. at 2500 R.P.M., equipped with two Type AG 9D SCINTILLA Aircraft Magnetos.

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Vol. XX APRIL 5, 1926 No. 14

American Air Transportation

WITH THE coming of the Spring of the present year it is impossible to be but impressed with the vast and rapid progress which has been made in the development of the airplane and air transportation. Twenty years ago the airplane, as we know it today, was but a dream. Yet the year 1926 will long be remembered as marking the opening of the first regular air transport systems to be operated by private enterprise throughout this country.

The airplane, apart from its early development, which was of an extremely experimental nature, unfolded, up to within a few years ago, as a wartime product. Certainly the war was responsible for the rapid development of the modern airplane in all its various types and sizes. At the commencement of the War, in 1914, the belligerent nations found themselves in possession of the meagrest and most unreliable types of aircraft but, nevertheless, these were immediately put into service. Their tremendous possibilities, resultant upon that most important asset, the wide range of visibility obtained with altitude, was fully appreciated.

As airplane design, and the knowledge thereof, developed, the load carrying possibilities of aircraft, in addition to speed, became further appreciated, and this, very naturally, led to the commencement of long range bombing expeditions being undertaken. It is, therefore, not surprising that, at the immediate close of the war, people began to turn their attention to the possibilities of the rapid transportation of heavy loads, whether of passengers or of mail and freight, in airplanes over considerable distances and at speeds greatly in excess of those possible in the already existing forms of travel.

Nor was this tendency anything to be wondered at, since, with all the numerous inventions of the present day, none may be considered to have been successful unless capable of application to the economic and useful service of mankind. And especially so is it in the case of transportation developments. The whole political and economic growth of a nation may well be attributed very largely to the development of adequate transportation systems by which its inhabitants may inter-communicate and exchange transactions with each other.

While aviation, as a whole, was greatly furthered in development by the advent of the War, nevertheless, in many respects this belligerent period may well be considered to have influenced this development somewhat adversely. During the stresses of the period, improvement in aircraft—increases in performance—were gained very largely by the simple expedient of the addition of more power to airplanes. There is no doubt that tremendous strides in aerodynamic development were made but the tendency to obtain speed as a direct result of added horsepower was very prevalent, with the result that the close of the War found the general impression of a good single place airplane as a machine of extremely light structural weight and comparatively small dimensions but equipped with an engine of the highest power it was possible to find in a single unit. Such can hardly be termed a really sound engineering proposition. It has taken considerable time to break down this tendency and to commence development along lines of pure efficiency and economy such that the airplane may be put to useful every-day service upon a thorough business basis.

That this period of carefully guided progress and unfoldment has now reached a stage when its results have brought aviation into the realm of a reliable and valuable form of transportation is characterized by the extensive air mail routes throughout the country, the operations of which have been let to contractors by the U.S. Postoffice Department. The operation of these services will call for the application of not only the best engineering genius but also of the best operative organizations. With the opening of the numerous services, undoubtedly the major question and the only one which will receive complete attention from the outset will be the successful carrying out of the contract and the reliable operation of the service in such a manner as not only to fulfill schedule but also to instill confidence in the minds of the respective sections of the public served.

The successful operation of any air transportation service will depend not only upon adequate organization but also upon the adoption of the most suitable equipment. Undoubtedly considerable attention has been given to this all-important question and, as experience is gained, changes may be made and services improved steadily with the advancement in general understanding of the types of service required. The problem of transportation by air is developing into such an art that there is likelihood that the trunk air routes of the future will call for the employment of specialized airplanes over different parts of the same route, depending upon the length of any particular leg and the natural characteristics of this particular section. Furthermore, the extent of the demand for the service over any particular section will govern the size of the plane employed.

These problems will all be solved in the course of general unfoldment and, in the meantime, hearty congratulations are due to those far sighted pioneers of American air transportation who have undertaken to pilot this vast transportation system of the future through its preliminary and juvenile stages.

Air Mail Service

Air Mail Development Stimulates Civil Air Development.

By HON. W. IRVING GLOVER,
Second Assistant Postmaster General.

AS THE month of April comes into full view in the Spring of 1926, the United States Air Mail Service winds out practically eight years of continuous flying with domestic air mail. Speaking in the terms of millions of miles, the Air Mail Service, up to the close of the calendar year 1925, had flown close to 12,000,000 miles and had carried millions upon millions of letters safely across the great stretches of the United States.

Up to this time the Air Mail Service has had to content itself with the use of D.H. planes for the transportation of the mail, but, with the increasing number of air mail routes, which are being placed in operation by contractors throughout the United States, it has been necessary for the Post Office Department to look around and concern itself with expanding its mail-carrying facilities so as to take on the increased loads which will be fed into and out of the transcontinental route by virtue of the establishment of the contract air mail routes.

Specialized Planes Developed

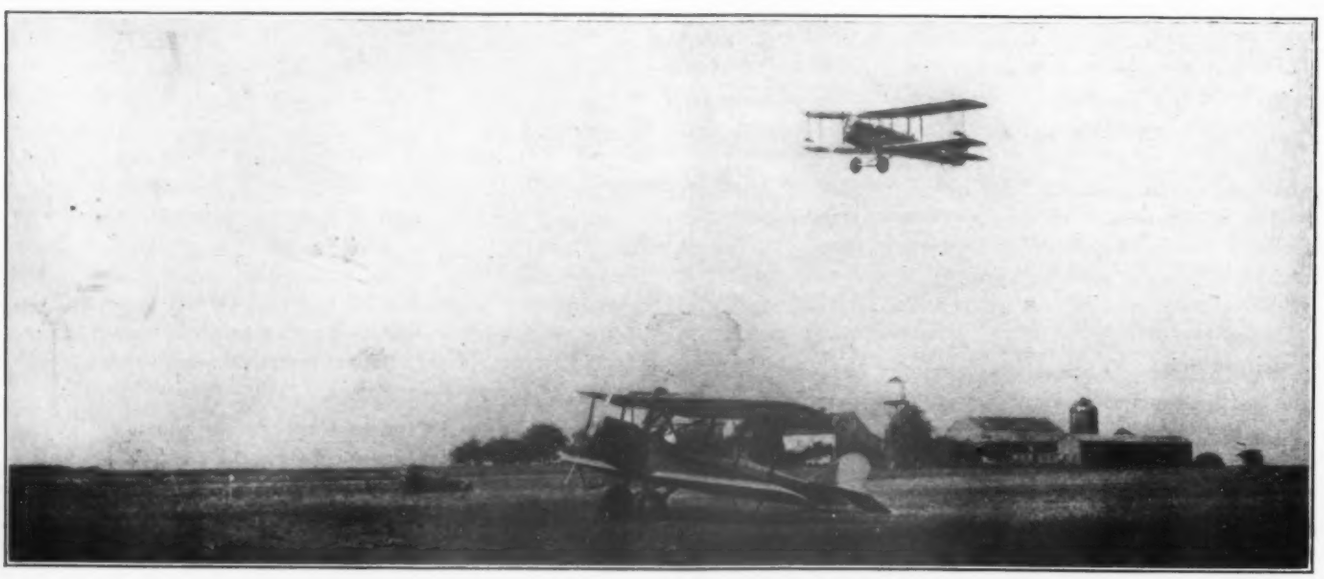
Orders have recently been placed for additional planes and it is expected that, by at least July 1, the schedule on the transcontinental route will be quickened and it will be possible to carry heavier loads with the larger and speedier planes which will then be in service. One of the latest planes to be adopted and used in the Air Mail Service is shown in the accompanying photograph and it will be noted that this plane is equipped for night flying, with the necessary lights installed thereon. This particular plane has been placed in the overnight service between New York and Chicago, and, nightly, it winds its fast course between Cleveland and New York in what might be considered one of the most hazardous parts of the transcontinental route. Just the other night this particular plane flew from Cleveland to New York in the fast time of 2 hr. 30 min., which, coupled with the flight from Chicago to Cleveland, made a record for the flying time between Chicago and New York of 4 hr. 35 min., representing an average speed of 158.04 m.p.h.

Ten Contracts Let

By virtue of legislation passed at the last session of Congress, which legislation is popularly referred to as the Kelly Bill, it has been possible for this Department to enter into contracts for the transportation of mail by aircraft with individuals, firms or corporations throughout the United States. The provisions of the Department with respect to this service provide that only mail bearing postage at the rate of 10 cents an ounce or fraction thereof, will be transported over contract routes. The Department has entered into contract up to this time with 10 contractors for the handling of mails by aircraft in various parts of the country, outlined in detail below:

Hon. W. Irving Glover,
2nd. Asst. Postmaster General

C.A.M. No. 1—Colonial Air Lines, Inc., Naugatuck, Conn.
C.A.M. No. 2—Robertson Aircraft Corp., Anglum, Mo.
C.A.M. No. 3—National Air Transport, Inc., Chicago, Ill.
C.A.M. No. 4—Western Air Express, Inc., Los Angeles, Calif.
C.A.M. No. 5—Walter T. Varney, San Francisco, Calif.



The Air Mail leaving New York. The airplane on the ground is a Curtiss air mail maintenance plane.

C.A.M. No. 6—Ford Motor Company, Dearborn, Mich.
C.A.M. No. 7—Ford Motor Company, Dearborn, Mich.
C.A.M. No. 8—Pacific Air Transport, San Francisco, Calif.
C.A.M. No. 9—Charles Dickinson, Chicago, Ill.
C.A.M. No. 10—Florida Airways Corp., New York, N. Y.

C.A.M. No. 10—Atlanta, Ga., by Jacksonville, Tampa and Fort Myers, to Miami, Fla., and return.

The Post Office Department is prepared, at this time, to enter into contract for the transportation of mail by aircraft between any point and over any routes where it may be found feasible to do so. There is pending, at this moment, the award of contract to two additional firms for the handling of mail by aircraft, and there will undoubtedly be other awards made in the very near future.

The Douglas Mail Plane used on the New York-Chicago Night Air Mail Service

Route details of these air mail services are as follows:

C.A.M. No. 1—Boston, Mass., by Hartford, Conn., to New York, N. Y., and return.
C.A.M. No. 2—Chicago, Ill., by Springfield, Ill., to St. Louis, Mo., and return.
C.A.M. No. 3—Chicago, Ill., by Moline, Ill., St. Joseph and Kansas City, Mo., Wichita, Kans., and Oklahoma City, Okla., to Dallas and Ft. Worth, Tex., and return.
C.A.M. No. 4—Salt Lake City, Utah, by Las Vegas, Nev., to Los Angeles, Calif., and return.
C.A.M. No. 5—Elko, Nev., by Boise, Idaho, to Pasco, Wash., and return.
C.A.M. No. 6—Detroit, Mich., to Cleveland, Ohio, and return.
C.A.M. No. 7—Detroit, Mich., to Chicago, Ill., and return.
C.A.M. No. 8—Seattle, Wash., by Portland and Medford, Oregon, Sacramento, San Francisco, Fresno and Bakersfield, Calif., to Los Angeles, Calif., and return.
C.A.M. No. 9—Chicago, Ill., by Milwaukee and La Cross, Wis., to St. Paul and Minneapolis, Minn., and return.

General Unfoldment

It has been roughly estimated that, by virtue of the legislation which has enabled the placing of these air mail contracts, orders have been placed by contractors with airplane construction firms for at least 100 airplanes within the past year. The stimulus which this has furnished to airplane construction is undoubtedly only the forerunner of a prosperous era in the near future which spells success for the scientific development of aviation in the United States. It is realized that, only through increased production and successful operation, will it be possible to develop, to the highest plane, the new airplanes of the future. There is much to be done in the construction of airplanes. There are many features which it will be necessary to develop highly before the airplane can become as popular as the automobile, but, as the science develops and as the art of carrying mail, express and passengers through the air goes on, the genius of the American will lend its ability to this art and the success of aviation is assured.

The Variable Density Wind Tunnel

An exact description of the new variable density wind tunnel of the National Advisory Committee for Aeronautics is contained in a report by Max M. Munk and Elton W. Miller. This is the first American type wind tunnel. It differs from ordinary wind tunnels by its being surrounded by a strong steel shell, 35 ft. long and 15 ft. in diameter. A compressor system is provided to fill this shell—and hence the entire wind tunnel—with air compressed to a density up to 25 times the ordinary atmospheric density.

It is demonstrated in the report that the increase of the air density makes up for a corresponding decrease in the scale of the model. Hence such American type wind tunnel is free from scale effect.

The report is illustrated by many drawings and photographs. All construction details are described, and many dimensions given.

The method of conducting tests is also described and some preliminary results given in the reports. So far, the tests have confirmed the chief feature of this wind tunnel—absence of scale effect.

A copy of report No. 227 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D.C.

Chicago to Dallas Air Mail Line

National Air Transport, Inc., to Carry U. S. Mail with Curtiss Carrier Pigeon Planes.

THE NATIONAL AIR TRANSPORT, Inc., is to operate contract Air Mail Route No. 3, extending approximately 1,000 miles from Dallas and Fort Worth, Texas, to Chicago, via Oklahoma City, Okla., Wichita, Kan., Kansas City and St. Joseph, Mo., and Moline and Rock Island, Ill., and Davenport, Iowa.

The line will be operated with Curtiss Carrier Pigeons mail airplanes. Up to the present considerable time and attention have been spent on organization and the laying out of flying fields and other ground equipment. Air mail will be carried over the route in addition to all other express matter. It is probable that this mail service will be extensively patronized since it connects some of the most important business and industrial districts in the country. Furthermore, it provides a rapid mail and express service with both the eastern and western coast, by connection with New York and San Francisco through the Transcontinental Air Mail Service operated by the Postoffice Department between these two cities.

Howard E. Coffin

Officers

The officers of National Air Transport, Inc., are as follows: president, Howard E. Coffin, of Detroit; chairman of the Executive Committee, Clement M. Keys, of New York; 1st vice-president, Charles L. Lawrance, of New York; 2nd vice-president, Wayne Chatfield-Taylor, of Chicago; 3rd vice-president, Eugene W. Lewis, of Detroit; secretary, Carl B. Fritsche, of Detroit; treasurer, John J. Mitchell, Jr., of Chicago.

Mr Coffin, in addition to being president of the N.A.T., is vice-president of the Hudson Motor Company. He has long been a national figure in aviation. Prior to the World War he directed the Industrial Preparedness Survey of the Council of National Defense, while during the War, he was chairman of the Aircraft Board. Immediately after the War, he was a member of the American Aviation Mission. In 1925-26, he was a member of the special Aircraft Board, appointed by President Coolidge.

C. M. Keys is also well known in aeronautical circles. He is an investment banker, being president of C. M. Keys & Company of New York. He is one of the leaders in industrial aviation and for the last four or five years, he has been president of the Curtiss Aeroplane & Motor Co., Inc. He was, as in the case of Howard Coffin, a member of the American Aviation Mission, which, under commission from the Secretary of War, investigated aviation conditions in England, France, Italy and Belgium, in 1919.

The name of Charles L. Lawrance is closely associated with aircraft engines and he is the originator of the aeronautical engines bearing his name. Mr. Lawrance is president of the Wright Aeronautical Corporation of Paterson, N. J. In National Air Transport matters he also acts as the representative of Richard T. Hoyt, member, Hayden, Stone & Company, investment bankers of New York.

Mr. Chatfield-Taylor, 2nd vice-president of the N.A.T., is a member of the banking house of Marshall Field, Glore, Ward & Company of Chicago, while Eugene W. Lewis is president of the Dime Savings Bank, and is an official of several other of the leading Detroit banks. As a capitalist, Mr. Lewis is heavily interested in the automobile industry.

The active management of the National Air Transport, Inc., is under Col. Paul Henderson, General Manager, whose offices are in Chicago. Colonel Henderson has established five principal departments, as follows:

Legal, under William B. McCracken, Jr.; Fiscal, under Franklin D. Myers; Engineering, under Lester D. Seymour; Operating, under E. P. Lott; Traffic, under Luther K. Bell.

As Manager of Operations, Mr. Lott maintains headquarters

C. M. Keys

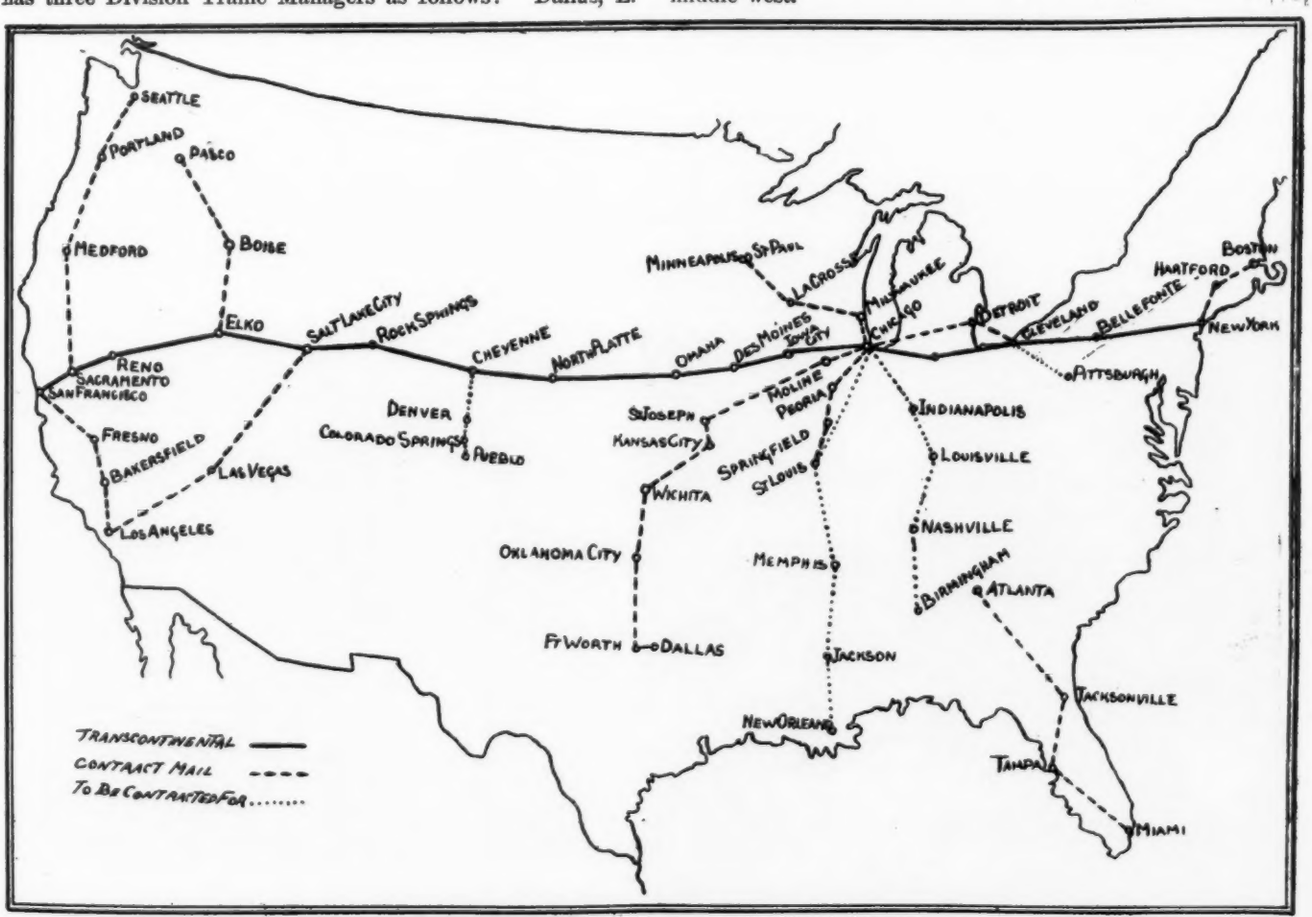
Chas. L. Lawrance

Paul Henderson

at Kansas City. His organization, at this writing, is not complete. At Chicago, Moline, St. Joseph, Kansas City, Wichita, Oklahoma City and Dallas he will have field managers. He will have eight pilots, four of whom will be based at Kansas City, two at Dallas and two at Chicago. Mr. Bell has three Division Traffic Managers as follows: Dallas, L. G. Matthews; Kansas City, C. E. Fleming; Chicago, R. W. Ireland. Traffic solicitation is actively under way and operations are to commence shortly.

The first Curtiss Carrier Pigeon for use on the Chicago-Dallas route

The line is expected to prove an extremely valuable service since it connects many important industrial centers of the middle west.



Map of the Air Mail Routes of the United States

Ford Air Transport

U. S. Mail Carried By Air Between Detroit and Cleveland and Detroit and Chicago.

THE FORD AIR TRANSPORT service formerly linked Detroit with the United States Transcontinental Air Mail line on Feb. 15, when the first sacks of U. S. mail, loaded by Henry and Edsel Ford and postal officials, were carried from the Ford Airport in Dearborn to Chicago and Cleveland.

Simple, yet impressive ceremonies marked the opening of the Detroit-Cleveland and Detroit-Chicago Contract Air Mail service.

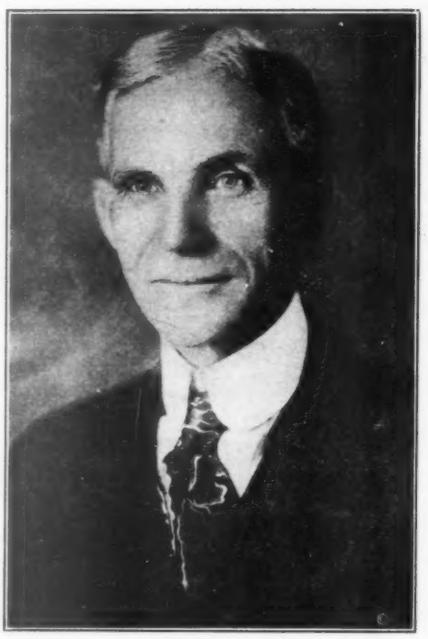
The Opening of the Ford Service

To the Maiden Dearborn 1, first plane of the Ford air fleet, fell the honor of carrying the first shipment of air mail from Detroit. As the large all-metal Stout monoplane stood at the wheel blocks with her Liberty engine warming for flight, witnesses recalled that she was the airplane which opened the Ford commercial aviation activities in America. On April 13, 1925, the Maiden Dearborn 1 flew from Detroit to Chicago, carrying a cargo of auto parts from Detroit, as the opening of the Ford Air Transport service.

At 10:40 a.m., on Feb. 15, 1926, Pilot Lawrence Fritz took off, swung around the field and then headed for Cleveland, followed by a group of Army Air Service pursuit planes which escorted him to the State line. He arrived at Cleveland at 11:57 a.m. This was the first scheduled flight on the Detroit-Cleveland contract air mail service.

At Cleveland, Pilot Fritz left on his return trip to Detroit and landed at the Ford Airport at 4:15 p.m., 1 hr. 45 min. after leaving Cleveland.

On his way to Chicago, after taking off at 3:16 p.m., Pilot Ross Kirkpatrick passed Pilot D. E. Burford, who left Chicago at 2:54 p.m. carrying the first Chicago mail to Detroit. Burford landed at the Ford Airport at 4:54 p.m., exactly 2 hr. after taking off at Maywood Field. Kirkpatrick, delayed by head winds, arrived at Maywood Field at 6:55 p.m.



Henry Ford

The past records and performance of the Ford Air Transport, to the day that the carrying of the U.S. mail was commenced, show that the planes had flown a total of 186,610 miles and carried a total of 897,000 lb. of company freight.

Interested crowd at the Ford Airport watches the preparation for the start of the Ford Air Transport U. S. Air Mail service from Detroit on Feb. 15

The Los Angeles–Salt Lake City Air Mail Line

Western Air Express, Inc., to Commence Operations April 10.

By HARRIS M. HANSHUE, President
Western Air Express, Inc.

WESTERN AIR EXPRESS, Inc., on the contract air mail line between Los Angeles and Salt Lake City, will commence operations about April 10, flying East and West daily over a 660 mile airway. This commercial air line will cut more than forty hours from the present fastest mail schedule between the populous and rich southern California region and Chicago. It will bring Los Angeles and adjacent communities within thirty hours by air mail of New York City.

Support From Western Industry

But Southern California, great in the present and with tremendous potentialities for the future—the heart of the far western industry and the home of great enterprises which need quick and constant contact with eastern markets,—will, in the very nature of things, support this enterprise. It was that faith in the forward, progressive, intelligent people who set out to build this nation in the face of every economic principle and so molded events as to make their development sound and stable, which led to the organization of Western Air Express, Inc.

The airway to be traversed is essentially a pioneer route, for, although it has been flown considerably by Army Air Service and by private planes during the past few years, it has never been mapped for aerial navigation and pilots who have flown it are of different opinions as to the preferable routing. Roughly, it calls for a straight line flight from Los Angeles to Las Vegas, Nev., and thence on a straight course from Las Vegas to Salt Lake City.

A stop is scheduled for Las Vegas where southern Nevada mail will be loaded and discharged and, by utilizing this point as a refueling station, we can cut down the fuel load of our planes, thereby increasing their pay load. In general, the airway follows the course of one of the nation's most historic highways, a road over which, during the past century, has been seen every conceivable method of transportation. This is

Pilots of Western Air Express, Inc. Left to right; Lieut. Fred W. Kelly, Lieut. Eldrid L. Remelin, Maj. C. C. Moseley, vice-president and general superintendent in charge of operations; Lieut. Charles N. James, Capt. Maurice Graham, Lieut. Al de Garmo.

Officers of Western Air Express, Inc. From left to right: Maj. C. C. Moseley, vice-president and general superintendent in charge of operations; Harris M. Hanshue, president and general manager; Byron L. Graves, treasurer.

the road over which our American immigrants raced with the Mexicans for settlement of Southern California. Over the Oregon trail to western Wyoming, thence South, through Salt Lake valley and along the California trail came the one, while, up from Santa Fe and the New Mexican colonies, the southern republic sent its people to hold its far western province. Burros, oxen, camels, mules and horses furnished the motive power for this early travel. And the highway they followed has not been materially altered even with the development of steam and automotive transportation.

Route Surveyed

The advent of commercial aviation made necessary aerial mapping of this route and Western Air Express, Inc., working in conjunction with the Army Air Service, equally desirous of securing this data, undertook this task. Not only has the route been charted from the air with alternate courses where such seemed desirable, but the entire force of Western Air Express, Inc., pilots have been sent over the route on the ground. Traveling in light trucks, they mapped and marked emergency landing fields at intervals of approximately ten miles, from locations made by air and were thus enabled to study intimate details of each of these fields.

To Use Douglas Planes

For service over this route, Western Air Express, Inc., selected the Douglas mail plane. Six of these planes will be ready for service by April 1, and a seventh will be added to the fleet shortly thereafter. Test flights will be made by the pilots assigned to the various planes and one complete round-trip test flight under service conditions will be made before actual commencement of operations under the Air Mail contract.

Connects With Continental Route

The schedule for this line calls for junction at Salt Lake City with the transcontinental line operated by the Postoffice Department. Our planes have a top speed of 145 m.p.h. and will cruise steadily with full load at 110 m.p.h. but we have taken a schedule which calls for approximately 85 m.p.h. to give us a factor of certainty of delivery at the Salt Lake junction. In addition to the mail, we will carry express shipments between our terminal points and, later, expect to enter the passenger carrying field.

For our western terminal we have secured our own airport under very reasonable terms at a point slightly more than six miles from the receiving postoffice. On this field we have erected hangar, machine shops and field office. At Salt Lake City we will use our own hangar placed without ground rental upon the municipal landing field now used by the Transcontinental Air Mail.

Public interest in this undertaking has been general both in Los Angeles and Salt Lake City. Every preliminary indication is that the people of this section are ready and eager for commercial aviation, at least insofar as it will put Southern California on the Transcontinental Air Mail map with direct, daily, constant service to the East and Middle West.

The first of the fleet of seven Douglas mail planes built for the Western Air Express, Inc., for the air mail contract line between Los Angeles and Salt Lake City

Commutes By Air Between Office and Home

Realizing that he had been losing a great deal of time traveling by motor, ferry and train, R. H. Depew, Jr., vice-president of the Fairchild Flying Corp., is now commuting by air between the office at Curtiss Field, Garden City, and his residence at Plainfield, N. J. He recently purchased a Sperry Messenger from the Fairchild Airplane Manufacturing Corp., of Farmingdale, L. I., and, after breakfast, he climbs into the cockpit and leaves the smooth Jersey meadow near his home and, 30 min. later, lands at Garden City on Long Island. The time by rail between the two commuting points is about 2½ hr. and by automobile 3½ hr. on week days and from 4 hr. to 5 hr. on Sundays.

Wacos in Production

The Advance Aircraft Co., manufacturers of Waco planes, announce that they are producing six planes per week and expect to increase their production to nine per week shortly.

They are experiencing an unprecedented demand for planes and have practically their entire production for the coming year sold. They have several machines sold outside of the United States, six going to San Salvadore and two to the Fairbanks Co. of Fairbanks, Alaska.

The company has a new field which is considerably better than that previously owned by the company, which was so small that visiting planes could not use it at all. The field is located North of Troy but it is right in town.

The Los Angeles–San Diego Airline

Ryan Airlines, Inc. Operating Efficient and Well Patronized Passenger Air Transportation Service

THE LOS ANGELES-SAN DIEGO AIRLINE has been maintained by Ryan Airlines, Inc., for over a year. On March 15, after 12½ months of operation, the 926th passenger stepped from the Los Angeles plane, took a deep breath of San Diego air and voiced the sentiment of every passenger who ever made the trip with one word, "wonderful!"

Ryan Airlines, Inc., in 3½ years' operation have totaled 496,272 passenger miles without an injury to a single pilot or passenger. Nearly twenty times around the world and a goodly portion of this was run on schedule.

Airplanes Manufactured

In two large hangars on the San Diego field, Ryan Airlines, Inc., has been manufacturing airplanes. Starting with the Standard, this type was rebuilt into a cabin airplane, which proved so successful that several were used exclusively on the Los Angeles-San Diego Airline with the exception of a special order from a large firm in Mexico. Other manufacturing work is also in progress.

Of these varied interests of Ryan Airlines, Inc., the fact that the Los Angeles-San Diego Airline has paid its way is most noteworthy. Not supported by fat government subsidy, unassisted by large donations and without a share of stock sold or for sale anywhere, the Airline between Los Angeles and San Diego has been operating consistently through all kinds of weather, day after day, and it has paid.

The Airline itself was a semi-experiment. Not a great deal of advertising was done to assure its success but sound business priciples, plus knowledge gained in the aeronautical school of experience, were given a thorough test and the lessons learned in the first twelve months of its daily operation are an invaluable asset.

The three men behind Ryan Airlines who put the Los Angeles-San Diego Airline across and who are responsible for the success of the present Ryan Airlines are T. C. Ryan, president and general manager; B. F. Mahoney, vice-president and treasurer; and J. B. Alexander, vice-president and sales manager of the present corporation.

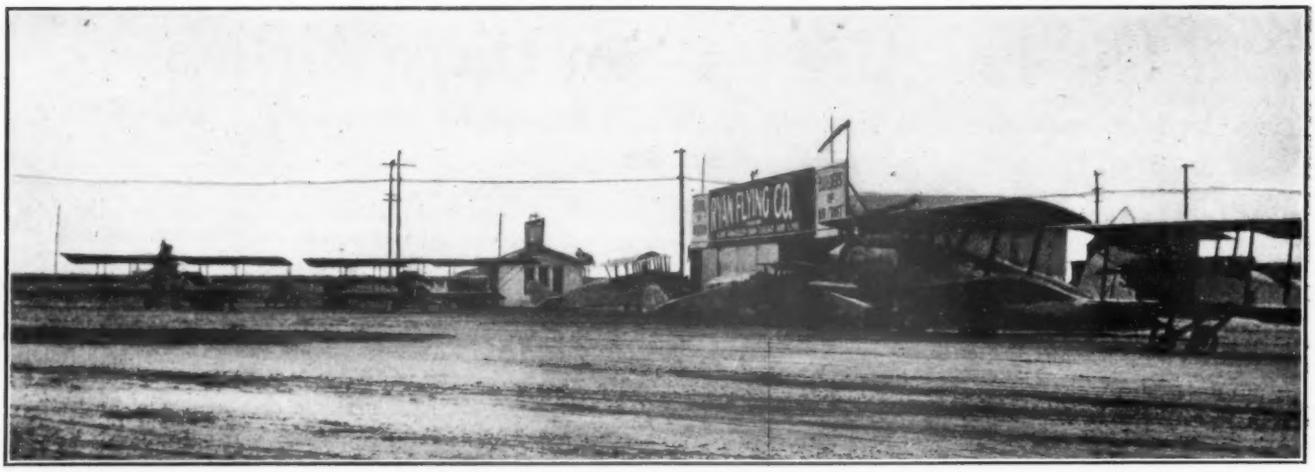
Mr. Ryan began his commercial flying from a baseball lot at the foot of Broadway, San Diego, with an overpowered 90 hp. OX5 Jennie, occasionally giving an engine r.p.m. of 1350. He soon became associated with an engineer from McCook Field, W. H. Bowlus, and a cabinet maker, C. D. Bowlus, and the first Ryan-Hisso cabin Standard was produced. It carried five people higher, faster, and further than most Standards would carry three, thus the success of Ryan Airlines was on its way.

History of the Service

B. F. Mahoney, a San Diego business man interested in aviation, formed a partnership with Ryan and, on March 1, 1925, there was established a daily airline between Los Angeles and San Diego. Three hundred feet of newsreel, showing several of Hollywoods' prettiest making the round trip, was enough to load the big planes to capacity for several months. As the season slowed up a bit, J. B. Alexander, who at that time had made a state wide reputation as sales manager of the W. P. Herbert Co., Los Angeles, was made district manager of the Airline and, in that way, the foundation for the present Ryan Airlines, was complete.

At the present time, six pilots, seven mechanics, three welders, and four cabinet makers are employed, besides a number of line men and large office and sales forces.

Los Angeles-San Diego Airline plane arriving in San Diego



The San Diego Field of the Ryan Airlines. The 12 passenger "Cloudster" can be seen in the foreground, with two other airline machines in background.

The success of the Los Angeles-San Diego Airline has been directly due to three things.

1. Sufficient traffic to support an airline. Southern California is one of America's big playgrounds and, up to the present time, flying, in the popular mind, is play.
2. Experienced business men, organizers and traffic men behind the project.
3. The equipment used was economical and safe. From Oct 7, 1922, to March 15, 1926, Ryan planes have spent 2,312½ hr. in the air, have covered a distance of 168,668 plane miles, and carried 11,136 passengers without injury to a single pilot or passenger.

In passenger miles the half million mark will soon be reached.

Washington, Oregon, Idaho Air Mail

Walter T. Varney to Operate Air Mail Service Connecting Elko, Nev., With Pasco, Wash.

WALTER T. VARNEY, of San Francisco, Cal., the Air Mail contractor for Route C.A.M. 5, has made official announcement that the Washington, Oregon, Idaho, United States Air Mail Service will start operations on April 6. The new air mail line will extend from Pasco, Wash., to Elko, Nev., and will serve the entire Pacific Northwest. It will also speed up mail from Alaska and the Orient.

Seattle, Portland, Tacoma, Spokane and all northwestern cities will be brought within practically 40 hr. of New York. A letter mailed from any northwestern city at 6:00 p.m., will go to Pasco overnight by mail train, where it will be transferred to the Washington, Oregon, Idaho Air Mail plane leaving Pasco at 6:00 a.m. and arriving at Elko at 11:00 a.m. At Elko mail will be transferred to the Transcontinental Air Mail plane for all points East or West. The eastbound plane arrives in Chicago at 8:00 a.m. the following morning, giving first delivery on Chicago, and midday and afternoon delivery to points as far distant as St. Louis, on the South and St. Paul—Minneapolis, on the North. This same plane goes on to New York, arriving there in the afternoon and giving late afternoon and next morning delivery in business centers as far distant as Portland, Me., on the North and Richmond, Va., on the South.

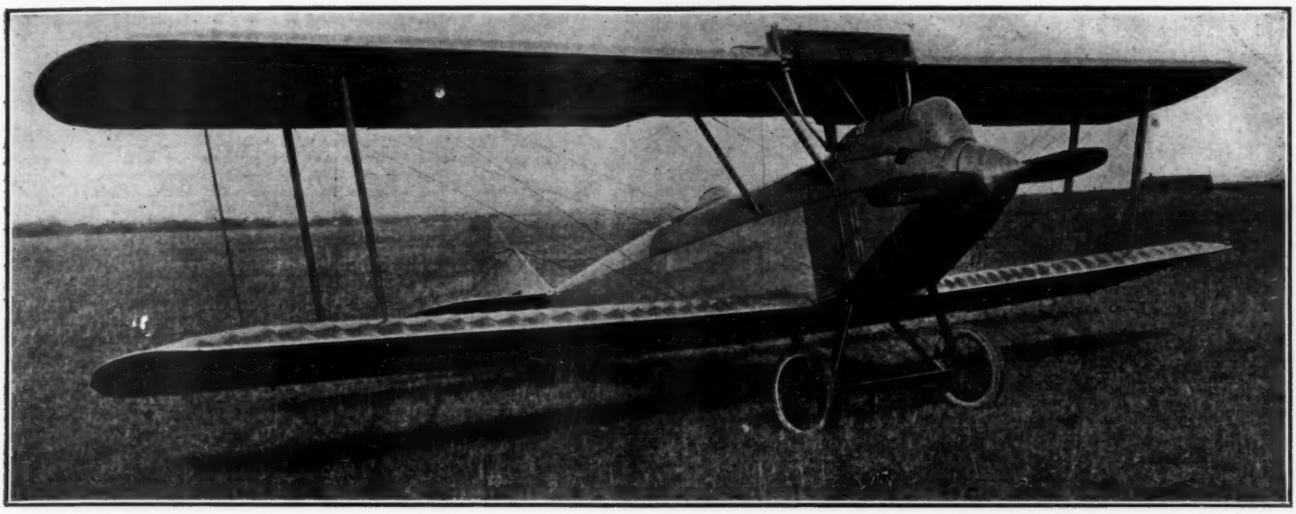
Postage from the Northwest to the New York zone will be 25 cents per ounce and 20 cents to the Chicago zone and 10 cents to Salt Lake zone.

Personnel

Varney will use six new type Curtiss C6 Swallow Air Mail planes, specially designed for air mail service by the Swallow Airplane Manufacturing Co. of Wichita, Kan. Three machines will be flying constantly,with three in reserve. Headquarters will be located at Boise, Idaho, where an intermediate stop will be made. The personnel of the Washington, Oregon, Idaho Air Mail line consists of: Walter T. Varney, owner and operator; Frank P. Bell, traffic manager; Charles T. Wrightson, office manager; Leon D. Cuddeback, chief pilot; Franklin Rose, Joe W. Taft, and George H. Buck, pilots; Chris De Velschow, chief mechanic and three assistant mechanics.

Walter T. Varney

Varney has been active in aviation circles in the West since 1916. During that time, he has served in the United



The New Swallow air mail plane of the type to be used by Walter T. Varney on the Elko, Nev.—Pasco, Wash., air mail route

States Army as R.M.A.; has operated a flying school since 1918; has operated an air mail run in Nicaragua, and an experimental express run from San Francisco to Modesto, Calif., for sixty days with every flight on schedule time. The Varney Flying School at San Mateo, Calif., is one of the most successful in the United States.

Taxi Service

Varney is also running a taxi plane service to all California and Nevada points. He is proud of his aviation record. In nine years his pilots have flown over 1,000,000 miles, with only two major crashes, and without a fatality or injury to either passenger or pilot. The four pilots employed in the mail service are all graduates of the Varney Flying School, and have interesting flying records behind them.

An intensive advertising campaign, being carried on throughout the Pacific Northwest territory by Frank P. Bell, traffic manager for the new air mail line, is being met with the greatest enthusiasm by postmasters, Chambers of Commerce, civic clubs and business men of the Northwest, who readily see the benefits to be derived from fast mail transportation.

The cities of Boise and Pasco have each donated a flying field for the new line. The Boise field, built by the city and the American Legion. is practically completed, and the Pasco field will be in readiness for the initial flight on April 6.

"It is my ambition to make the Washington, Oregon, and Idaho, United States Air Mail Service an outstanding success," says Varney, "and I have every confidence that the people of the Great Northwest will continue to give the air mail their hearty support. It is a matter of a very short time before the use of air mail will be universal."

Great Time Saving

The Washington, Oregon, Idaho, United States Air Mail Service will have for its flying crew, the four pilots named, all being graduates of the Varney flying school of San Mateo, Cal. The new mail route will effect a 50 hr. saving of time over the present mail trains between points in the Northwest and New York.

Leon Cuddeback, chief pilot, has been associated for years with Walter T. Varney, contractor for Air Mail Route C.A.M. 5, both in connection with the Varney flying school and the Varney taxiplane service on the Pacific Coast. Cuddeback also made test flights from Nicaragua for a period of three months for a proposed mail route in that country. He has had years of experience in cross country flying. Joe Taff, Franklin Rose and George Buck have all piloted for Varney at different times, Buck having later operated an aviation school in Petaluma, Calif., and Rose having served as a United States Army Reserve pilot for one year.

The system worked out by Varney is arranged in such a way that each of the four pilots flies every other day only. The first plane leaves Pasco at 6 a.m., lands at Boise at 9:35 a.m., where a fresh pilot continues the run in a fresh plane. At Elko, the return trip is started with still another pilot and plane, and so on, four planes being in constant use between the three points, with two in reserve. The first pilot returns to Pasco, where he services his plane on the following day and starts out again on the second day.

To Use Radio

Radio stations are installed at the three landing fields at Pasco, Boise and Elko, and pilots keep in constant communication with each other. Time of departure and arrival and weather conditions are reported over the wireless.

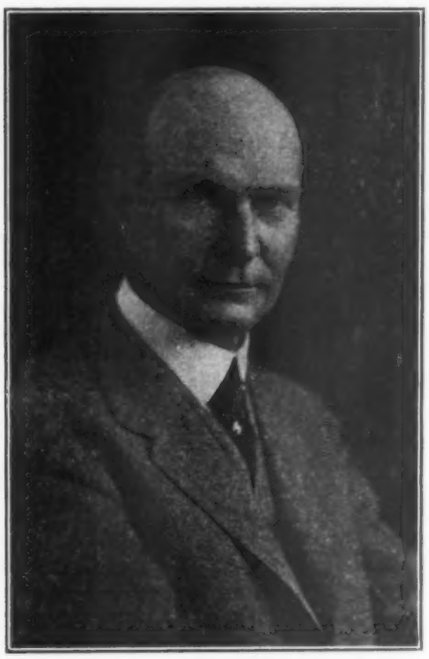
Men who will pilot ships for the Washington, Oregon, Idaho United States Air Mail Service, which starts operations April 6. Left to right: Leon Cuddeback; George Beuck; Joe Taff; Franklin Rose.

The employment of radio is an extremely interesting feature of the plans of operation of the Washington, Oregon, Idaho Air Mail. It will mean that the pilots of the mail planes will be in constant touch with the ground throughout flights while mail is being carried between Elko and Pasco, and weather reports may be supplied during a flight, which will be extremely valuable to pilots.

Boston–New York Air Mail Line

Boston and Other Parts Linked With New York and West By Colonial Air Transport, Inc.

THE COLONIAL AIR TRANSPORT, Inc., a Connecticut Corporation, was formed in an outgrowth of the Eastern Air Transport, Inc., and the Colonial Air Lines, Inc., two strong companies organized to develop New England Air Mail and Express service. The union of these two companies under the new name of Colonial Air Transport, Inc., effected a consolidation ably financed to undertake the establishment of air transport in New England and the Eastern States.



Hon. John H. Trumbull, Governor of Conn.

W. Irving Bullard

The officers of the Colonial Air Transport, Inc., are:

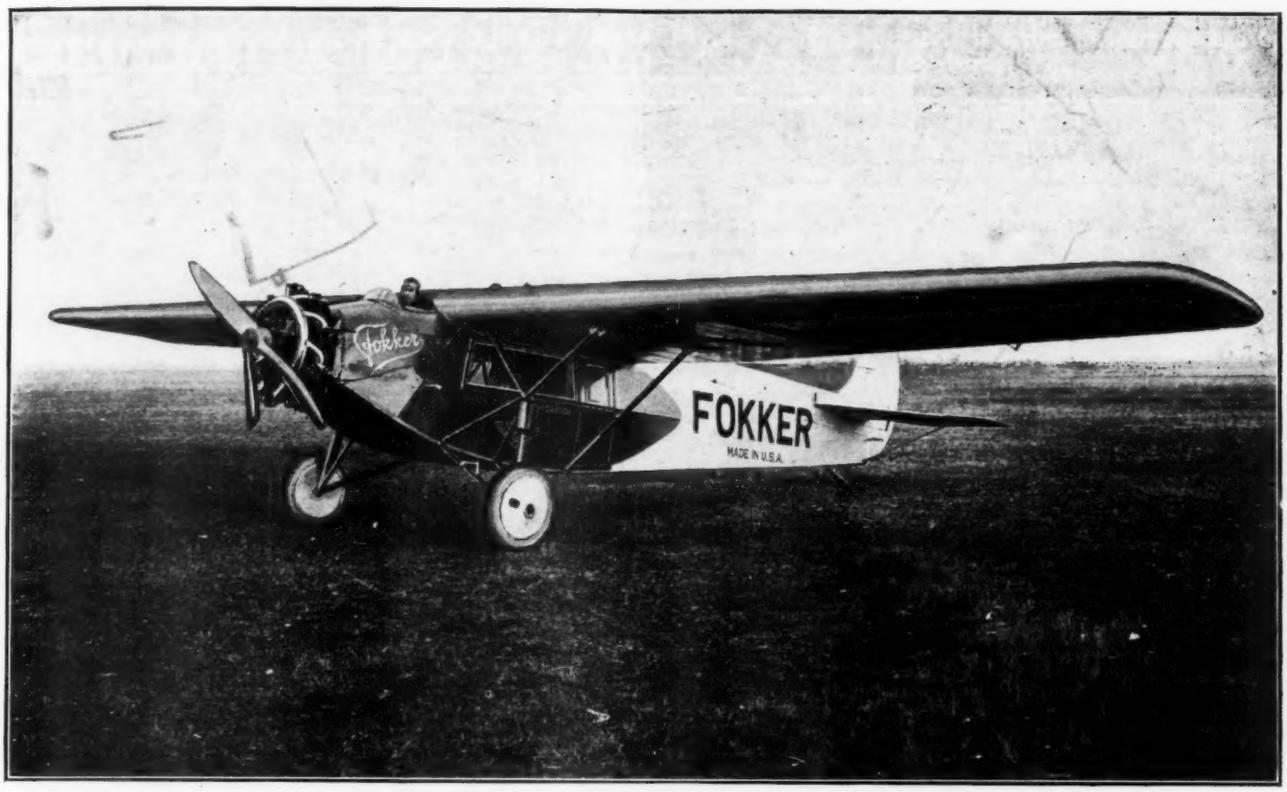
John H. Trumbull, Chairman of the Board; W. Irving Bullard, President; Sherman M. Fairchild, Vice-President; Leonard S. Horner, Vice-President; Harris Whittemore, Jr., Vice-President and Assistant Treasurer; J. T. Trippe, Vice-President and Managing Director; L. L. Odell, Secretary; Talbot O. Freeman, Treasurer; Robert G. Thach, General Counsel; F C. Arnoult, Traffic Manager. Board of Directors—Lloyd L. Anderson, Waterbury, Conn., Manager Field Service Bureau, Connecticut Chamber of Commerce; W. Irving Bullard, Boston, Mass., Vice-President Merchants National Bank of Boston, Vice-President Boston Chamber of Commerce; Stanley H. Bullard, Bridgeport, Conn., Vice-President Bullard Machine Tool Company, Director Chamber of Commerce of the United States, Past President, Connecticut Chamber of Commerce, Past President National Association of State Chamber of Commerce Officials; Howard Coonley, Boston, Mass., President Walworth Company, Past President, Chairman Executive Committee and Director Boston Chamber of Commerce, Director John Hancock Mutual Life Insurance Co., Director Second National Bank, Boston; John A. Hambleton, Baltimore, Md., Vice-President, Hambleton & Co., Baltimore and New York; Sherman M. Fairchild, New York City, President Fairchild Aerial Camera Corporation, Treasurer Aeronautical Chamber of Commerce; Dutee Wilcox Flint, Providence, R. I., President and Director Dutee Wilcox Flint, Inc., Director Rhode Island Hospital Trust Company; Talbot O. Freeman, Hartford, Conn., Connecticut Manager Putnam & Storer, Inc., Boston, Ex-Commanding Officer 43d Division Air Service, Chief Aviation Inspector State of Connecticut; Leonard S. Horner, New Haven, Conn., Vice-President and Director, The Acme Wire Company, Councilor, Chamber of Commerce of the United States, National Aeronautic Association, Governor for Conn., Vice-Pres. and Director, Conn. Chamber of Commerce; E. Kent Hubbard, Middletown, Conn., President, Manufacturers Association of Conn., Inc., Member Connecticut State Board of Finance; Edmund W. Longley, Boston, Mass., Vice-President New England Telephone and Telegraph Company; Bernard H. Matthies, Seymour, Conn., Director and Assistant Treasurer, Seymour Manufacturing Company, Trustee, Seymour Trust Company; L. L. Odell, New York City, Transportation Executive, Ford Bacon & Davis, New York; William A. Rockefeller, New York City, Lee Higginson & Co., New York, Director National Air Transport, Inc.; Lorillard Spencer, New York City, President Somma Shops, Inc., New York, Chairman Aviation Committee New York Board of Trade and Transportation; Robert G. Thach, New York City, Corporation Counsel, Attorney, Manufacturers Aircraft Association, Attorney, Aeronautical Chamber of Commerce; J. T. Trippe, New York City, Managing Director Colonial Air Transport, Inc.; John H. Trumbull, Plainville, Conn., Governor of the State of Connecticut, President Trumbull Electric Manufacturing Company; Donald S. Tuttle, Naugatuck, Conn., Director Naugatuck National Bank, Treasurer Naugatuck Chamber of Commerce; Edward P. Warner, Cambridge, Mass., Professor of Aeronautical Engineering, Massachusetts Institute of Technology; Cornelius Vanderbilt Whitney, New York City, Director Guaranty Trust Company of New York, Harris Whittemore, Jr., Naugatuck, Conn., Warden, Borough of Naugatuck, Secretary J. H. Whittemore Company, Vice-President Connecticut Bond and Mortgage Co., Director Eastern Malleable Iron Company.

The Colonial Air Transport at present holds the Postoffice contract for the transportation of air mail from Boston by way of Hartford to New York, closely connecting with the Government operated night air mail service to Chicago. The schedule constitutes a round trip five days a week—the planes leaving the Boston airport at 6:30 in the evening, via Hartford; leaving there at 7:45 p.m., in time to connect up at New Brunswick with the night plane to Chicago at 9:30 p.m. The return flight provides service from New Brunswick, N. J., leaving at 6 a.m., with the Chicago and Western mail; arriving at Hartford at 7:30 and Boston 8:30 in time for first business mail delivery. This schedule permits of daylight flying during the summer months; the remaining eight months being entirely night work. To commence the service, single motored ships of the Curtiss-Lark and Fokker Universal type will be used. Plans practically completed, however, provide for the substitution of large tri-motored transport ships equipped with the Wright J-4B engine. This decision was reached only after serious consideration, it being felt that the increased reliability and elimination of forced landings, together with the decreased insurance premiums and larger pay load available, outbalanced the increased equipment investment and higher operating cost per ship mile.

Advantages to New England

This projected service will mean much to New England, heretofore entirely deprived of any useful air mail service. The poor train connections and the necessary haul across New York City from the Grand Central to the Pennsylvania Station eliminated any saving in time to New England rendered by the over-night airplane service from New Brunswick, N. J., to Chicago. In other words, the New England letter handled entirely by rail to Chicago by way of Albany, reached Chicago at the same time as one handled partly by rail to New Brunswick, N. J., and thence by air to Chicago.

The Colonial Air Transport, Inc., however, can place the New England business letter, mailed at 5 o'clock into New



A Fokker Universal of the type to be employed on the Boston-New York Air Mail Service

Brunswick at 9 o'clock in time to be delivered in Chicago and other western cities early the next morning. New England will receive the same over-night service now enjoyed by the Metropolitan district; for it takes no longer to fly a letter from Boston and Hartford to New Brunswick, N.J., than it does to transport it by train from New York to New Brunswick.

The officers and directors of the Colonial Air Transport, Inc., are keenly interested in air transportation as a practical aid to New England and New York business. They readily see in this new arm of transportation a way to bridge the growing distance that separated their various plants from their sources of raw materials and outlet markets to the West. To the manufacturer this is an acute problem; especialy in New England—that rich industrial peninsula jutting out and isolated from the rest of the United States. Governor Trumbull aptly described the situation at a recent dinner, at which seventy-five of New England's leading executives were guests of the Colonial Air Transport, Inc., when he said—"The Connecticut Yankee is a farmer by instinct, a fisherman by temperament and a manufacturer by necessity." New England, because of her manufacturing experience, her trained executives and wealth of skilled labor, has been able to hold her own to date, in spite of increased freight and express rates to her various sources of raw materials and to her outlet markets, which, of course, are out of proportion to some of her Western competitive manufacturing centers. In some industries, however, it has been a losing fight and all New England will welcome and support the advent of Air Mail and Express Service, an over-night convenience that will practically eliminate her geographic disadvantage.

The Chicago–St. Louis Air Mail Line

St. Louis and District Put on Air Mail Route By Service to Be Operated By Robinson Aircraft Corp.

THE ROBINSON AIRCRAFT CORP. of Anglum, Mo., of which William B. Robertson is president, is to operate, to contract, the air mail route connecting Chicago and St. Louis, via Peoria and Springfield. The contract was signed upon an agreement guaranteeing the company 67.5% of the income derived from the postage of air mail letters between these two points.

The Postmaster has announced that the route will be opened on April 15, and the company originally proposed to employ four Curtiss Oriole planes and five DeH J-4 machines.

The length of the route is 278 miles. The service will be operated on a schedule making connection at Chicago with the overnight air mail service in each direction between New York and Chicago, thus placing in St. Louis at 9:15 each morning letters leaving the New York flying field at 9:40 the preceding evening. Eastbound, letters catching a plane at St. Louis at 4 p.m. will be delivered on the first carrier run in New York the following morning. The frequency of the route is to be daily except Sunday and Monday, southbound and except Saturday and Sunday, northbound.

The flying schedule of the route follows:

Leave Chicago upon arrival of overnight plane from New York		Leave St. Louis	4:00 p.m.
Arrive Peoria	7:15 a.m.	Arrive Springfield	4:55 p.m.
Leave Peoria	7:25 a.m.	Leave Springfield	5:05 p.m.
Arrive Springfield	8:05 a.m.	Arrive Peoria	5:45 p.m.
Leave Springfield	8:15 a.m.	Leave Peoria	5:55 p.m.
Arrive St. Louis	9:15 a.m.	Arrive Chicago	7:15 p.m.

Chicago–St. Paul Minneapolis Air Mail

Laird Planes to Be Used in Operating Northern Air Mail Route From Chicago.

THE AIR MAIL service connecting Chicago and St. Paul Minneapolis, with the interconnection with LaCrosse, has been contracted for by Charles Dickinson, of Chicago who plans to employ Laird planes over this route. As

Charles Dickinson

in the case in the majority of the other contract air mail services, the route is to be operated each way on every day of the week with the exception of Sundays. The route is of considerable importance since it provides a valuable connection between the twin cities of the North and the Transcontinental Air Mail service at Chicago.

Under the terms of the contract there is the provision that, during that part of the year when the daylight hours are short, the schedule may be retarded from that proposed in the original contract so as to permit daylight flying over the entire route, or the contractor will be permitted to fly the course from Chicago to LaCrosse over a route which will be adapted to night flying.

The tentative schedule of the service as originally announced is outlined below:

Leave Chicago on arrival of plane from New York due at	5:45 a.m.	Leave St. Paul-Minneapolis	3:00 p.m.
Leave La Crosse	8:40 a.m.	Leave La Crosse	4:40 p.m.
Arrive St. Paul-Minneapolis	10:05 a.m.	Arrive Chicago	7:15 p.m.

Atlanta-Miami Air Mail Route

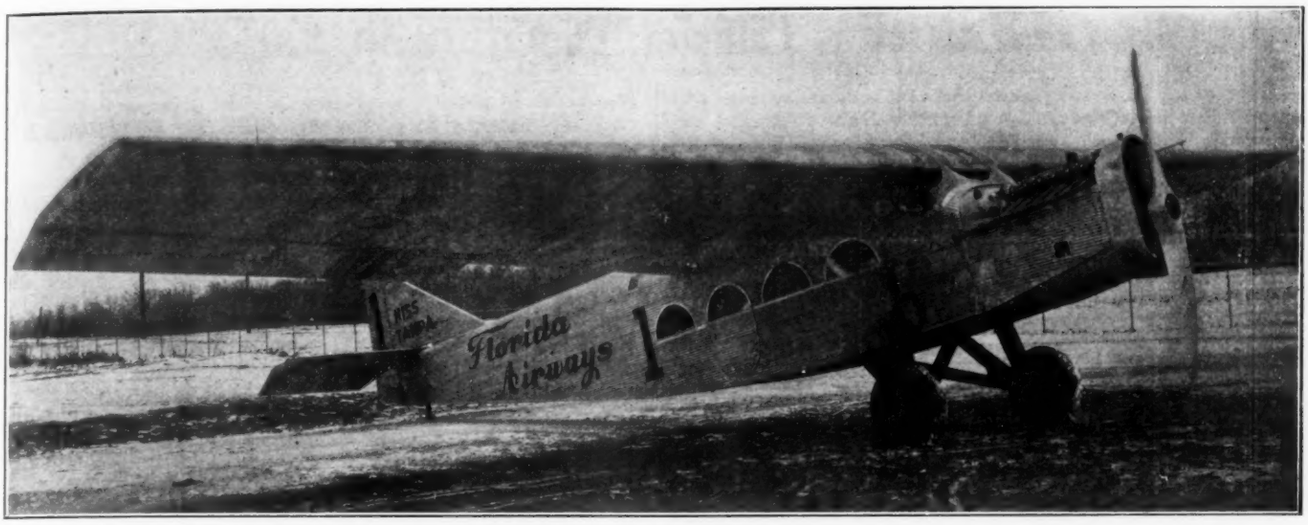
The Florida Airways Corp. which has obtained the contract for the carrying of United States Air Mail over the route from Atlanta, Ga., to Miami, Fla., will commence operations shortly on that part of the route connecting Miami with Jacksonville. The continuation of the route to Atlanta will be undertaken later, by June 1 at the latest.

This route was first advertised on Nov. 18. The Florida Airways Corp., under the presidency of Maj. Reed M. Chambers, has headquarters at Tampa, Fla., one of the stopping places on the mail route. John Harding, who will be remembered as one of the Round-The-World fliers of the U. S. Army Air Service, is with the company in charge of maintenance in the operations.

The Schedule

The route is to be flown via Jacksonville, Ft. Myers and Tampa and the bid of the corporation was for 80% of the revenues. Stout all-metal planes are to be used while the companies equipment also consists of Curtiss Larks and Travel Air OXX-6 machines. The distance covered between Miami

One of the Laird Commercial type planes to be used on the Chicago-Minneapolis-St. Paul Air Mail service. Pilot "Billy" Brock and E. M. Laird standing against the plane.



Miss Tampa—one of the Stout Monoplanes of Florida Airways, Inc.

and Jacksonville is 468 miles and the daily schedule is to be as follows:

South Bound		*North Bound*	
Leave Jacksonville	10:00 a.m.	Leave Miami	7:00 a.m.
Arrive Tampa	11:55 a.m.	Arrive Ft. Myers	9:05 a.m.
Leave Tampa	12:05 p.m.	Leave Ft. Myers	9:15 a.m.
Arrive Ft. Myers	1:10 p.m.	Arrive Tampa	10:20 a.m.
Leave Ft. Myers	1:20 p.m.	Leave Tampa	10:30 a.m.
Arrive Miami	3:25 p.m.	Arrive Jacksonville	12:25 p.m.

Seattle–San Francisco Air Mail Line

Pacific Air Transport, Inc. to Operate West Coast Route.

THE PACIFIC AIR TRANSPORT, INC., contractors for the air mail route, C.A.M. No. 8, which extends from Seattle, Wash., to Los Angeles, Calif., via Portland and Medford, Ore., Sacramento, San Francisco, Fresno and Bakersfield, Calif., is planning to commence operations on or about May 1. The planes which will be used are Ryan monoplanes of a design recently completed by the Ryan Airlines, Inc., of San Diego. This plane, which carries approximately 600 lb. of mail, is equipped with a Wright Whirlwind radial air-cooled engine, of the now well known type, developing 200 hp. Complete details of the machine are not, as yet, available, but the approximate total weight is 1300 lb. It is a semi-cantilever type monoplane with the wing on top of and attached to the fuselage and with two streamlined bracing struts extending on each side from the lower longerons of the fuselage outwards and upwards to points on the front and rear spars, approximately two thirds of the distance from the center line of the wing. The undercarriage, which is very robust, is of the split axle type. Ten of these planes will be employed by the Pacific Air Transport, one having already been delivered.

Officers

The officers of the company, which has headquarters in San Francisco, include, Verne C. Gorst, president and C. N. Comstock, vice-president. Extensive work is already underway in preparing the ground organization of the line and numerous flights have already been made over the route in the first plane which, as already mentioned, has just been delivered. This plane recently covered the distance from San Diego, where it was constructed, to Los Angeles in 1 hr. 2 min. The distance by road is 130 miles while it is probably 120 miles by the air route followed. Later, the plane, carrying Mr. Gorst and Mr. Comstock, flew on to San Francisco in 3 hr. 45 min. and then on to Portland, Ore., in 5 hr. 26 min. Mr. Comstock remained a few days at Portland, attending to business in connection with the line and was picked up later by the plane which then returned to San Francisco. Excellent progress with the organization of Pacific Air Transport is being made.

The mail route from Los Angeles to Seattle will be of extreme importance since it links these two cities with the Transcontinental Air Mail Service and definitely brings these important centers, and the other cities on the Pacific Air Transport line, into close contact with Chicago, Detroit (via the Ford Air Transport lines) and New York, on the Atlantic Coast.

Model and Full-Scale Tests

A report entitled, "Some Aspects of the Comparison of Model and Full-Scale Tests" by D. W. Taylor, published by the National Advisory Committee for Aeronautics, is a reprint of a paper delivered before the Royal Aeronautical Society as the 1925 Wilbur Wright Memorial Lecture. It treats the subject of scale effect from the standpoint of the engineer rather than the physicist, in that it shows what compromises are necessary to secure satisfactory engineering model test data and how these test data compare with full scale or with theoretical values. The paper consists essentially of three parts: (1) A brief exposition of the theory of dynamic similarity, (2) application of the theory to airplane model tests, illustrated by test data on airfoils from the National Advisory Committee for Aeronautics variable-density wind tunnel, and (3) application of the theory to propeller testing, illustrated by comparisons of model and full-scale results.

A copy of the report, No. 219, may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D.C.

The Curtiss Carrier Pigeon and Lark

Long a leader in airplane design and construction, it is natural to find the Curtiss Aeroplane and Motor Company, Inc., active in the development of commercial air transport aircraft of the very highest order. The Curtiss Carrier Pigeon and Lark are well known in this field. The Carrier Pigeon, which was designed to provide a mail or freight airplane of large capacity and incorporating the qualities of general robustness and strength such as are a major requisite in regular scheduled air transport work, has been adopted by the National Air Transport, Inc., for use on the Chicago-Dallas air mail route.

It is a biplane having an exceedingly deep body which carries half a ton of mail (40,000 letters) or parcel post or express packages. Using the same power plant, it carries, at a decreased expense and an increased speed, twice the load carried by the DH Air Mail planes. A great amount of thought and study was spent on the design of this plane including conferences with mail service officials and pilots, wind tunnel tests, weight calculations, detail stress analysis and static tests.

Construction

The wings of the airplane are of wood and steel construction, fabric covered. The upper and the lower wings are so designed that they are interchangeable, no center wing section being required. The wing beams are of solid routed spruce, with no glued joints to deteriorate. The ribs are of Warren truss design, giving a tested strength well over the maximum required in the airplane. The factor of safety of the wing structure averages 25 per cent over that required in the design. Not only have the main structural members of the wings been carefully analyzed for strength but also every detail fitting and bolt. This is also true, of course, of all other parts of the structure. Sidewalk panels of ample size are provided on the wings for use in servicing the machine and in handling the mail.

The tail surfaces have the same general shape and are similar in construction to the wings. All control surfaces are of such a size as to insure adequate control at all speeds. The factor of safety in the tail, owing to the thick tail surfaces, is unusually high, being, in some cases, over three times that required. The rudder, elevators and ailerons are identical, being interchangeable one with the other, thus reducing the number of spares to a minimum. The right and the left stabilizer are interchangeable, as are the ribs in both the fin and stabilizer.

The fuselage frame and the engine mount are constructed of welded steel tubing, using a Warren truss construction, dispensing with the usual wires which require periodical adjustment. The mail compartment is located on the center of gravity of the airplane, thus insuring proper balance at any mail load. The mail compartment is accessible from the side as well as from the top by means of hinged doors of such size as to admit very bulky packages. Loading and unloading of mail is facilitated to a high degree.

Special attention has been paid to the design of the landing gear and tail skid. The former uses the rubber "doughnut" type of shock absorbing medium employed on the PW8 pursuit planes. The danger of the axle fouling brush, hay, snow, etc., is, of course, reduced to nothing with the axleless landing gear. The wheels are large and the tail skid proper is a large, high tensile steel tube. It is steerable and sprung, to give the easiest possible shock absorbing qualities.

The engine is the Liberty XII with all latest improvements. The gasoline tank, located under the mail compartment and also faired into the fuselage lines, is dropable in flight, an insurance against fire in case of an imminent crash.

Pilot's Accommodation

The pilot's seat is made especially for use with a parachute and, in addition, is shaped to fit the pilot's body. It is adjustable to accommodate different pilots and arm rests, made adjustable, are installed for the comfort of the pilot. The rudder control is by means of pedals with swiveling foot rests, while the control column can be instantly changed to either stock or wheel control, to suit the convenience of the pilot. The aileron control is of the "differential" type, insuring adequate control even near stalling speed. The ailerons also are so lined that each side is an independent unit.

Characteristics

The Carrier Pigeon was successfully designed to meet the following performance:

High speed, 120 m.p.h.
Rate of climb, 1020 ft. per min.
Absolute ceiling, 16700 ft.
Service ceiling, 15100 ft.
Maximum range, normal, 630 miles,
Using total tank capacity, 725 miles
Endurance, normal, 8 hr., using total tank capacity, 9.4 hr.

The Curtiss Carrier Pigeon

General Characteristics:
Wing loading (lb./sq. ft.), 9.78
Power loading (lb./hp.), 12.29
Aerofoil section U.S.A., 27
Factor of safety, H.I. = 5.5

Weights:

Useful load (lb.)		
Crew	180	
Fuel and oil	655	
Pay load	1000	
Equipment	20	
		1855
Weight empty (lb.)		
Power-plant	1506	
Structural	1394	
Fixed equipment	145	
		3045
Gross weight (lb.)		

Dimensions:
Length, overall, 28 ft. 9½ in.
Span, upper, 39 ft. 1½ in.
lower, 41 ft. 11 in.
Height, overall, 12 ft. 1 in.
Chord, both wings, 78 in.
Gap, 84 in.
Stagger, 0 deg.
Incidence (angle), 0 deg.
Dihedral, upper wing, 0 deg.
Lower wing, 2 deg.
Sweepback, 0 deg.
Landing angle, 15 deg.

Areas:
Wing, inc. ailerons, 505 sq. ft.
Ailerons (4), 53.6 sq. ft.
Horizontal tail, 65.6 sq. ft.
Vertical tail, 28.1 sq. ft.
Elevator, 26.8 sq. ft.
Rudder, 13.4 sq. ft.

Propellers:
Type Curtiss-Reed 2 blade duralumin
Diameter, 10 ft. 6 in.
Pitch, 7 ft. 6 in.

Power Plant:
Liberty 12
Horsepower, (at 1700 r.p.m.) 400
Fuel consumption 0.46 lb./hp. hr.
Oil consumption, 0.04 lb./hp. hr.
Fuel capacity, 110 gal.
Oil capacity, 10 gal.

The Curtiss Lark Series

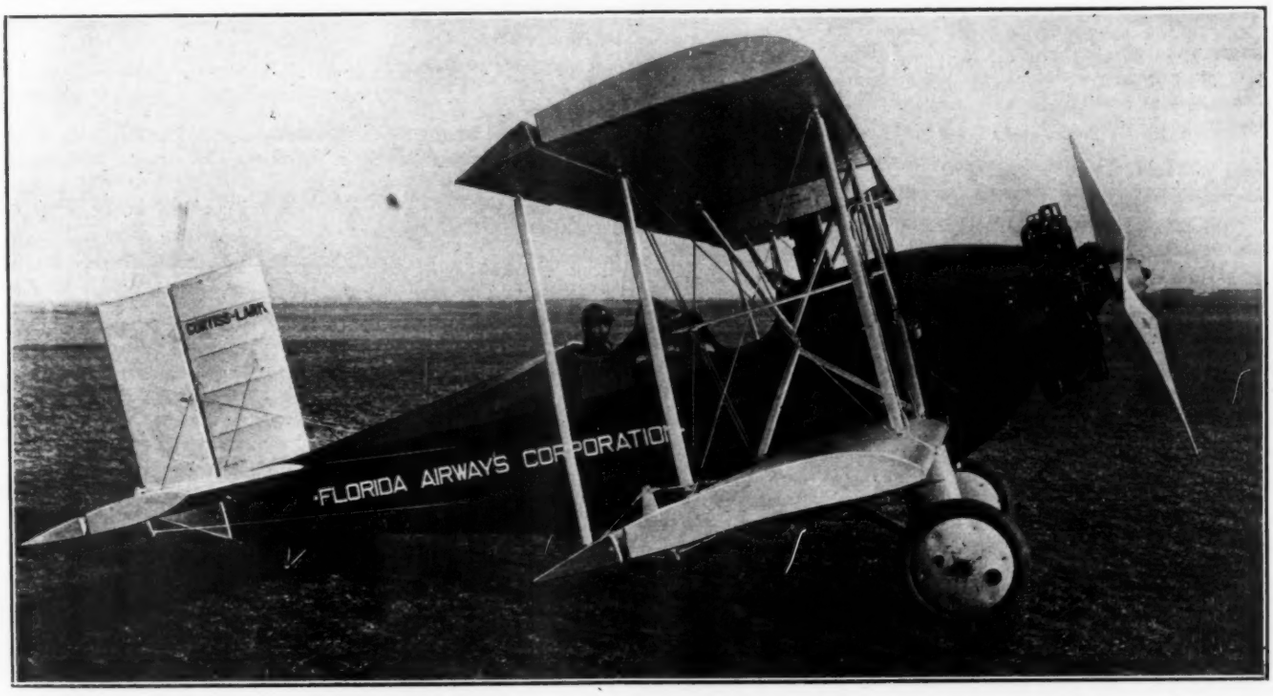
The Curtiss "Lark Series" comprises two, three, or four-place tractor biplanes of medium power, designed for general commercial flying, primary training, or feeder-line transport service. The planes are powered with either the 200 hp. Wright Whirlwind, the 180 hp. Wright E-2 or the 160 hp. Curtiss C-6 engine. These engines have been chosen because of their acknowledged leadership in their respective classes, the reliability and excellent performance of each having been proved through years of hard service. Furthermore, the large quantities of these engines available throughout the country make it possible for fliers owning their engines to purchase the planes, less engine, and equip them themselves.

The general design throughout is one of simplicity and ruggedness. Particular attention has been paid to primary commercial requisites—safety, economy, accessibility, and ease of maintenance. Standardization and interchangeability of parts have been carried out to a marked degree. Upper and lower wings are directly interchangeable, and, in the wing structure itself, all beams are interchangeable and all ribs identical. The ailerons and elevators are likewise identical and interchangeable, and stabilizer and fin use the same ribs, beams and fittings.

The fuselage is constructed throughout of welded steel tubing using a rigid Warren truss with no brace wires to sag or break. This is the simplest and most durable construction. The landing gear is of the split-axle type, and the tail skid is steerable, a highly desirable feature which provides excellent taxiing qualities.

The general characteristics of the Lark with the three engine equipment are as follows:

	J-4	*E-2*	*C-6*
Length, overall	21 ft. 0 in.	25 ft. 0 in.	21 ft. 10 in.
Span, overall	30 ft. 8 in.	9 ft. 7 in.	30 ft. 8 in.
Height, overall	8 ft. 11 in.	30 ft. 8 in.	8 ft. 11 in.
Fuel capacity, gal.	68	45	53
Weight empty	1494	1698	1550
Pilot, fuel, etc., lb.	612	441	530
Pay load, lb.	600	261	340
Gross weight, lb.	2706	2399	2420
High speed, m.p.h.	117.5	117.4	114.0
Stalling speed, m.p.h.	53	49.7	50.5
Initial rate of climb, ft. per min.	880	1010	860
Climb in 10 min., ft.	6720	7700	12500
Service ceiling, ft.	14100	15500	6340
Cruising range, miles	515	101	97
Cruising speed, m.p.h.	101	380	465
Cruising endurance, hours	5.1	3¾	4.8



The Curtiss Lark with Wright Whirlwind engine. This particular plane is being used by Florida Airways, Inc.

Boeing Mail Plane

This machine is a two bay biplane with a combination steel tubing and wood monocoque fuselage. The wings are braced with steel N struts and the usual lift and anti-lift wires in the outer bays. The fittings are sunk in the wings and this makes the cellule very clean looking.

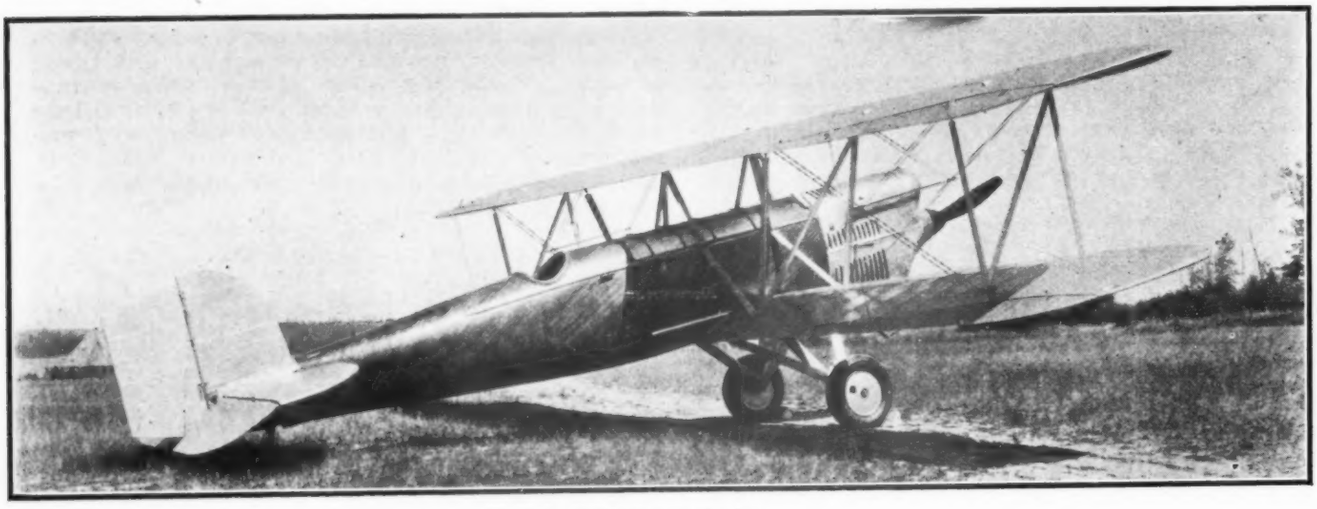
The wings are made of wood and covered with fabric. There are four ailerons, all without balance. The controls consist of pulleys and wires and are carried through the interior of the wing panels.

As stated above, the fuselage is of mixed monocoque and steel tubing construction. The front and rear sections are steel tubing, while the body section is monocoque. The mail compartment is directly behind the engine, with the pilot's cockpit aft.

The engine is a Liberty XII, as called for by the Postoffice. Fuel is delivered to the engine from the 125 gal. tank by means of air pressure. A pressure fire extinguishing system and a metal wall behind the engine are provided for the protection of the pilot and mail. An Aeromarine inertia starter is employed.

The general characteristics of the plane are as follows:

Length, overall	33 ft. 11 in.
Height, overall	12 ft. 2 in.
Span, upper and lower wings	44 ft. 2 in.
Chord, both wings	6 ft. 7 in.
Gap	6 ft. 5 in.
Airfoil (Wing Section)	Boeing 103
Area of wings, including ailerons	547 sq. ft.
Weight empty	3425 lb.
Useful load:	
Parachute and equip.	40 lb.
Fuel and oil:	
Gasoline 750 lb. and Oil 100 lb.	850 lb.
Pilot	180 lb.
Pay load	1000 lb.
Total weight	5495 lb.
Wing loading	10.05 lb./sq. ft.
Power loading—400 hp.	13.71 lb./hp.
Endurance at cruising speed	7 hr.
Range	700 mi.
Maximum speed, full load	135 m.p.h.
Landing speed, full load	50 to 55 m.p.h.
Climb to 5,000 ft., full load	8 min.
Climb to 10,000 ft., full load	18 min. 30 sec.
Service ceiling	15,800 ft.



The Boeing mail plane

The Stinson Detroiter

The Stinson Detroiter is a small passenger carrying airplane providing accomodation for four passengers, including the pilot, within a comfortably arranged enclosed cabin. The machine is a single bay biplane with undercarriage and is essentially an owner-pilot machine for the accomodation is such that the plane may be employed in much the same manner as an owner used his automobile. It is an extremely simple plane to fly, the controls in some respects being similar to the control of an automobile. This is largely on account of the wheel lateral and longitudinal control and the foot pedal rudder control. The machine is also equipped with landing wheel brakes which enable the plane to be pulled up quickly on the ground upon landing and also greatly assist in maneuvering the machine on the ground before or after flight. The machine is fitted with a Wright Whirlwind engine.

General specifications of the Stinson-Detroiter are given in the following table:

Cruising range	500 miles
Span, both wings	33 ft. 9 in.
Length, overall	28 ft.
Chord, both wings	6 ft.
Dihedral, lower wing	4 degrees
Wing curve	U.S.A. 35B
Total wing area	350 sq. ft.
Weight, empty	1,700 lb.
Designed to carry	1,200 lb.
High speed	125 m.p.h.
Cruising speed	105 m.p.h.
Minimum flying speed	50 m.p.h.
Landing speed	45 m.p.h.
Gasoline capacity	76 gal.
Oil capacity	7½ gal.

A general view of the Stinson Detroiter

The Buhl–Verville Airster CW-3

In the class of the small commercial airplane is the recently completed CW-3, the latest product of the Buhl-Verville Aircraft Company of Detroit, Mich. It is a sturdy, serviceable, efficient type, combining design features which facilitate its adaptability to the following types of service: passenger carrying, light freight carrying, aerial photography, crop dusting, and training. Arrangements are provided whereby almost any power plant between 100 and 200 hp. may be installed, only simple changes being necessary, since the engine mount is detachable.

Wings Fold

The wing cellule is of the biplane type, without stagger. Both upper and lower panels are interchangeable, and are hinged to the upper and lower sections and wing butts, respectively, with fittings designed to allow the folding back of the wings on the field, in order to facilitate the storage of the airplane within a restricted hangar space of approximately 9 ft. high by 13½ ft. wide by 25 ft. back. These wings can be folded back in twelve or fifteen minutes. The fuselage is of steel tube construction, welded into an integral structure without any wire or braces of any nature.

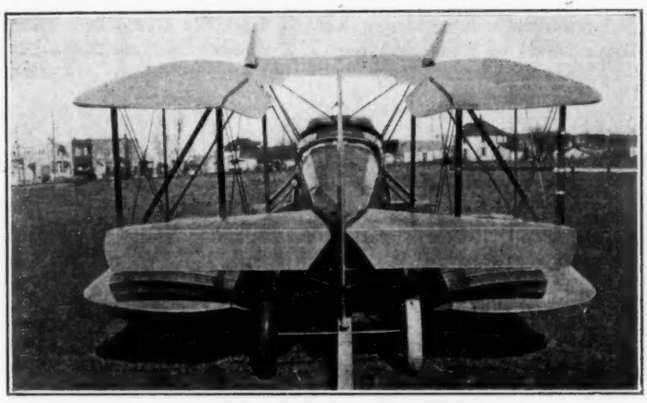
Two cockpits are provided in the fuselage, the aft being for the pilot, and the forward one for the passengers. Immediately ahead of the pilot's cockpit is a small tool and baggage compartment. The passenger's cockpit is 35 in. wide, this allowing comfortable seating accommodation for two people sitting side by side. In the case of a freight plane or crop-dusting plane, the seats in the front cockpit can be removed, thus making provision for a capacity of approximately 23 cu. ft. in volume. Access to the passenger compartment is facilitated by a triangular hinged door, located on the left side.

The Control

The control is by means of wire cables extending, in the case of the elevator controls, from the control column back to a counter shaft in the after end of the fuselage, from the extremities of which extend radius rods to the elevator posts. Attached to the rudder bar are two sets of cables, one set extending back to the rudder posts for rudder control, and the other set to the tail skid for ground steering while taxiing.

The tail unit consists of a stabilizer, vertical fin, divided elevator and rudder. All of these tail surfaces are of welded steel tube construction and fabric covered. Special adjustment is likewise provided for the fin, in order to counteract the propeller torque reaction. The stabilizer is braced, on its under surface, to the bottom fuselage longeron, with two streamline tubes and, on the upper surface, to the upper extremity of the rudder hinge post, two streamline wire braces being provided.

The CW-3, as at present constructed, is equipped with a 90 hp. Curtiss OX5 engine, cowled under a quickly detachable cowling. A 40 gal. gasoline tank, sufficient for five hours flight, is situated immediately back of the engine, in the fuselage and ahead of the passenger cockpit. The gasoline system is of the gravity feed type. The oil, in the case



The Buhl-Verville CW-3 with folded wings

of the OX5 model, is carried in the bottom half of the engine crank case. The radiator is located immediately under the engine, and is of the underslung type. It is provided with shutters which are manually operated by the pilot in flight.

The main characteristics of the airplane are as follows:

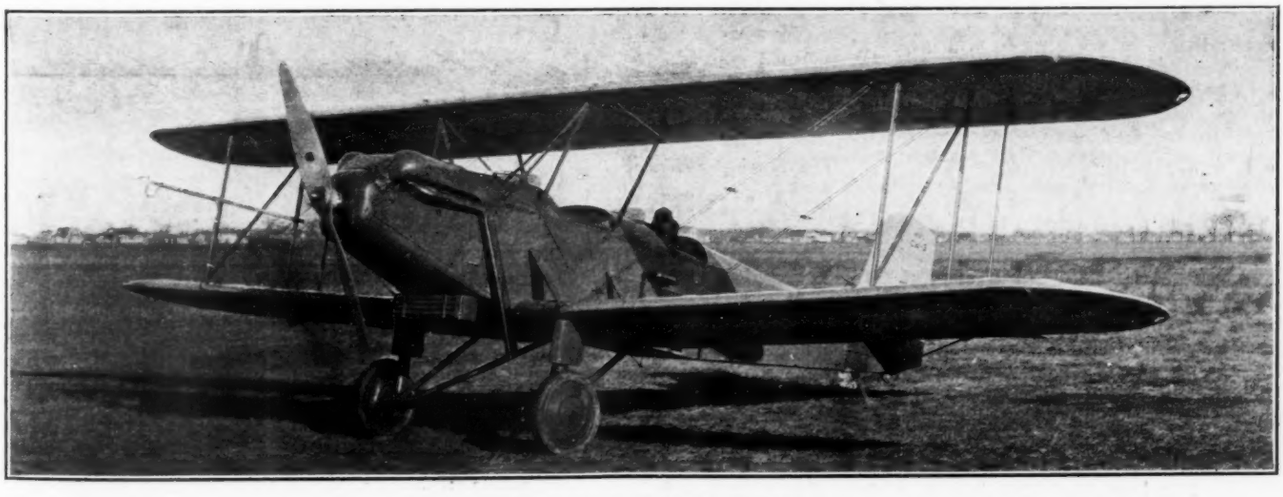
Span, maximum	35 ft.
Length, maximum	25 ft.
Overall width with wings folded	13½ ft.
Height, maximum	9 ft.
Area of wings	300 sq. ft.
Area of ailerons	28 sq. ft.
Area of stabilizer	21 sq. ft.
Area of elevators	16½ sq. ft.
Area of fin	5¾ sq. ft.
Area of rudder	8½ sq. ft.

With OX5 engine installation:

Weight empty	1380 lb.
Weight fully loaded	2150 lb.
Endurance at full throttle	5 hr.
High speed	95 m.p.h.
Low speed	40 m.p.h.

With Wright Whirlwind (200 hp.) engine installation:

Weight empty	1415 lb.
Weight fully loaded	2300 lb.
Endurance at full throttle	3½ hr.
High speed	133 m.p.h.
Low speed	45 m.p.h.
Rate of climb at ground level	900 ft./min.



General view of the Buhl-Verville Airster

The Remington–Burnelli Airliner

Among the larger class of air transport airplanes, the Remington-Burnelli twin-engine machine holds an important place. Its design is somewhat peculiar, in view of the fact that, while a twin-engine and twin propeller design, each engine is actually situated in the fuselage itself. This is rendered possible by the fact that the fuselage is extremely wide and the engines are installed in the two front corners of the nose. The fuselage is further interesting because of its unusual shape a side elevation, it being designed to form the contour of an airfoil as far as possible. It undoubtedly contributes to a certain extent to the total lift of the plane as a result of this feature. The size of the fuselage allows considerable cargo or passenger space, the cabin measuring 14 ft. by 16 ft. by 6 ft.

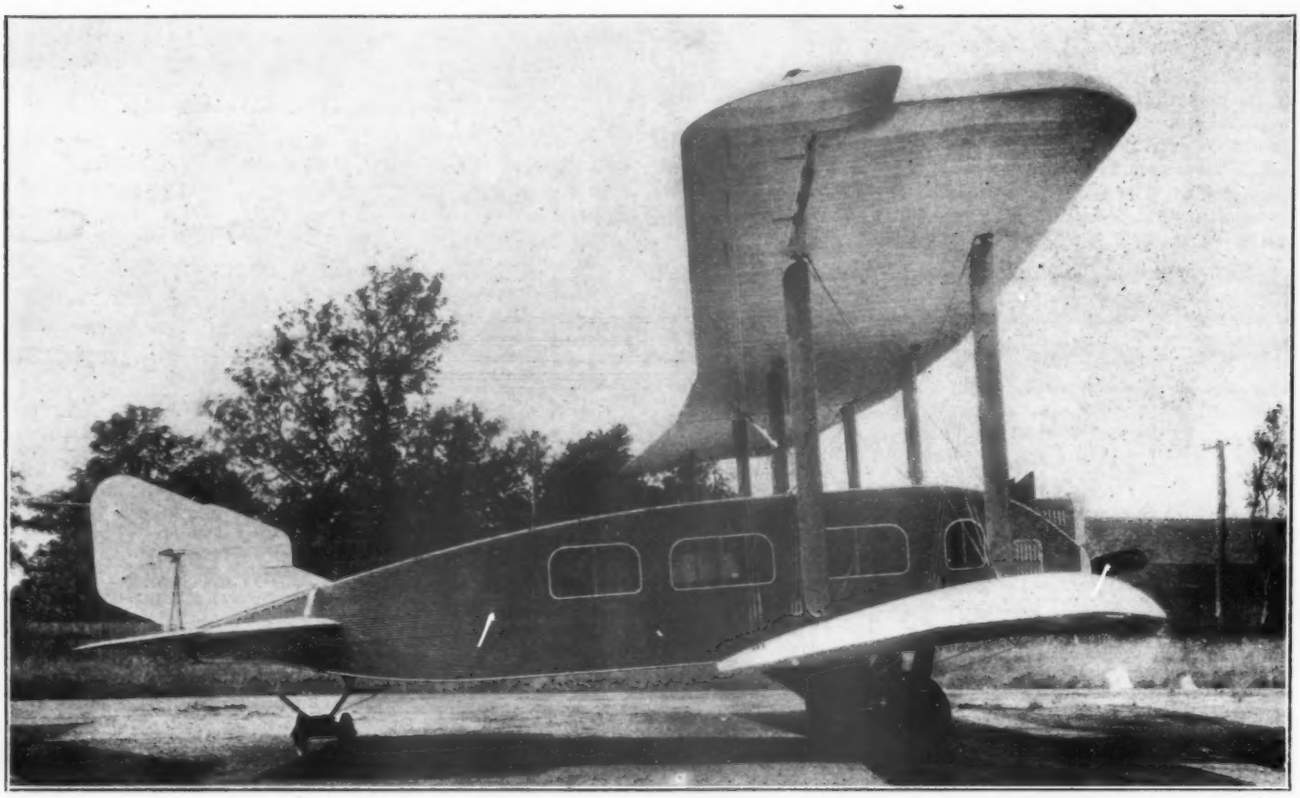
The construction of the fuselage is of duralumin, riveted channel section struts being employed together with a corrugated sheet covering which contributes considerably to the structural strength.

The wing construction is original, consisting of box type duralumin girders with lattice webs. The compression struts are spaced approximately 6 ft. apart and conform to the wing contour. Between the compression struts, and fastened to them, are duralumin U section members, spaced 2 ft. apart running laterally. They are used to take the covering load and do away with the conventional rib construction. The covering of the wing is of 1/10,000 in. duralumin, 1¼ in. corrugated, 1¼ in. pitch and ⅜ in. deep, formed to the wing contour and riveted to the wing beams. The location of the wing beams from the leading edge is 19% of the cord for the front beams and 69 per cent for rear beams. The length of the center section is 14 ft., that of the inner bay 18 ft. and that of the cantilever panels 14 ft. These brief details will serve to briefly describe this interesting airplane.

Specifications

Following are the general details of the machine:

Wing span	78 ft.
Wing chord	10 ft. 6 in.
Gap	11 ft. 4 in.
Wing area	1517 sq. ft.
Areas of tail surfaces:	
Horizontal stabilizers	44 sq. ft.
Elevator	74 sq. ft.
Vertical fin	33 sq. ft.
Rudder	36 sq. ft.
Weight, empty	9 450 lb.
Cargo, passengers and crew	4,000 lb.
Fuel and oil	2,150 lb.
Total loaded weight	15,600 lb.



The Remington-Burnelli twin-engine airliner

Stout Air Transport Plane

In use on the Ford Air Transport services carrying U. S. Mail on contract over the routes Detroit-Chicago and Detroit-Cleveland and also to be employed by the Florida Airways, Inc., on the mail route connecting Miami, Fla., with Atlanta, Ga., the Stout all-metal plane is well suited to hard service. It is a six passenger cagin design with the pilot's cockpit under the leading edge of the large cantilever monoplane wing.

The passenger cabin is equipped with six deep upholstered seats and with plenty of leg room for the tallest of passengers. For long trips the two rear seats fold together to form benches on the side facing each other, with a card table arranged between. For mail and freight service, however, these appurtenances are done away with and the cabin space kept clear.

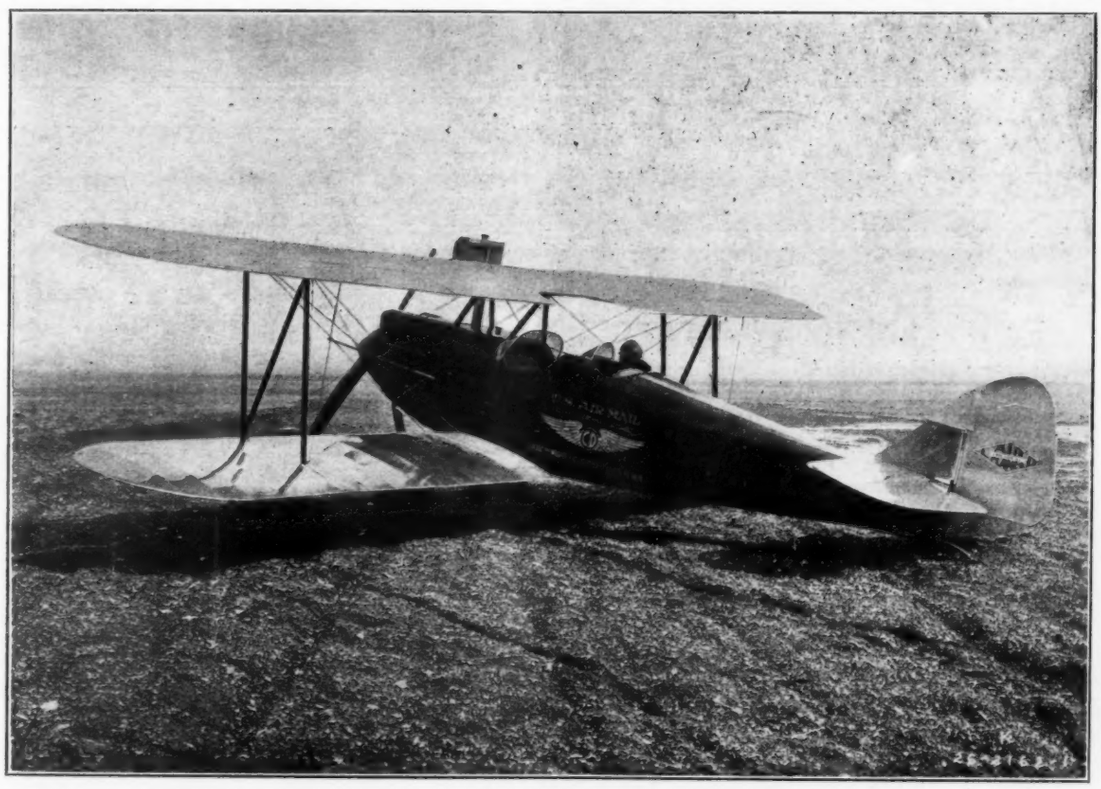
Forward of the passenger compartment are two partitions about 3 ft. apart, enclosing toilet facilities. From this room one can reach overhead to the baggage hold, situated out in the wings. From here also the gasoline tanks can be inspected and every part of the gasoline system, up to the dash board, inspected or repaired while in the air.

In the Lead From the Start

With the inauguration of real Air Transport in the United States

"LAIRD" COMMERCIAL AIRPLANES

will be found leading the way, as they have lead the way in the development of other branches of commercial aviation.



"LAIRD" Commercials powered with OX5 and Wright Whirlwind engines will be operated on the Chicago-Minneapolis Air Mail route, by Chas. Dickinson, of Chicago.

E. M. LAIRD AIRPLANE CO., Inc.

FACTORY ASHBURN FLYING FIELD, 4500 W. 83 ST., CHICAGO, ILL.

The Stout Metal Monoplane

Forward of the toilet compartment is the pilot's cockpit, which has side by side seats and dual controls, and is fully equipped with all navigating instruments and map equipment. It has very high and wide wind screens and is large enough to stand up in. The sides of the cockpit are entirely left open. In some models, however, swinging windows are arranged so that the cockpit can be entirely enclosed, heated and ventilated.

The plane is constructed entirely of duralumin in corrugated form. The wing unit is divided into three sections. The center part is fastened onto the fuselage by large bolts to the three main spars. The two outer wing sections are detachable for shipping and transportation purposes or for replacement in case of damage.

A wing of thick section is used, the main spar being almost 3 ft. deep on a chord of trifle over 12 ft. at the center. The fuselage, which is below the wing, is fitted with semi-circular windows which swing on a pivot and give an unusual view in the air. The pilot's vision is such that he can see in every direction, and can see the landing gear and practically every part of the plane from the cockpit. The landing gear is of the divided type, with no axle or cross tube to catch on weeds or brush and thus make trouble. A standard Liberty XII engine is used in the Stout planes of both the Ford and the Florida companies.

Characteristics

The chief dimensions and performance of the Stout plane are as follows:

Span	58 ft. 4 in.
Length (overall)	45 ft. 8 in.
Chord, max.	12 ft. 10 in.
Chord, min.	7 ft. 9 in.
Chord, mean	10 ft. 6 in.
Height (at rest)	11 ft. 10 in.
Wing area	600 sq. ft.
Wing tip clearance	9 ft. 11 in.
Horizontal tail area	75 sq. ft.
Vertical tail area	37 sq. ft.
Engine	400 hp. Liberty
Wing loading	9.85 lb. per sq. ft.
Power loading	14.8 lb. per hp.
Total weight	6017 lb.
Weight empty with water	3638 lb.
Useful load	2379 lb.
Fuel	149 gal. (843 lb.)
Oil	96 lb.
Pilot	160 lb.
Pay load	1280 lb.
Duration at max. speed	4 hr.
Max. speed	116 m.p.h.
Min. speed	53 m.p.h.
Rate of climb at ground	500 ft. per min.
Service ceiling	10,000 ft.
Absolute ceiling	12,000 ft.
Time to climb to 5,000 ft.	12 min.

Ryan Cloudster and Standard

A plane used very largely on the Ryan Airline operating between San Diego and Los Angeles is the Ryan Standard. This is a four passenger cabin airplane evolved from the Standard J1 plane.

The cabin is finished in mahogany plywood and upholstered in Spanish leather. The top of the cabin is hinged and can be opened, making it easy for passengers to get in and out. The seating arrangement is such that all four passengers face forward. Four large windows are provided, one directly opposite each passenger, making vision fully as good as in an open plane. Furthermore, the inside of the cabin has no wires or rods visible, being entirely lined with plywood, and having all throttle, control rods, switch wires, etc., passing through conduits.

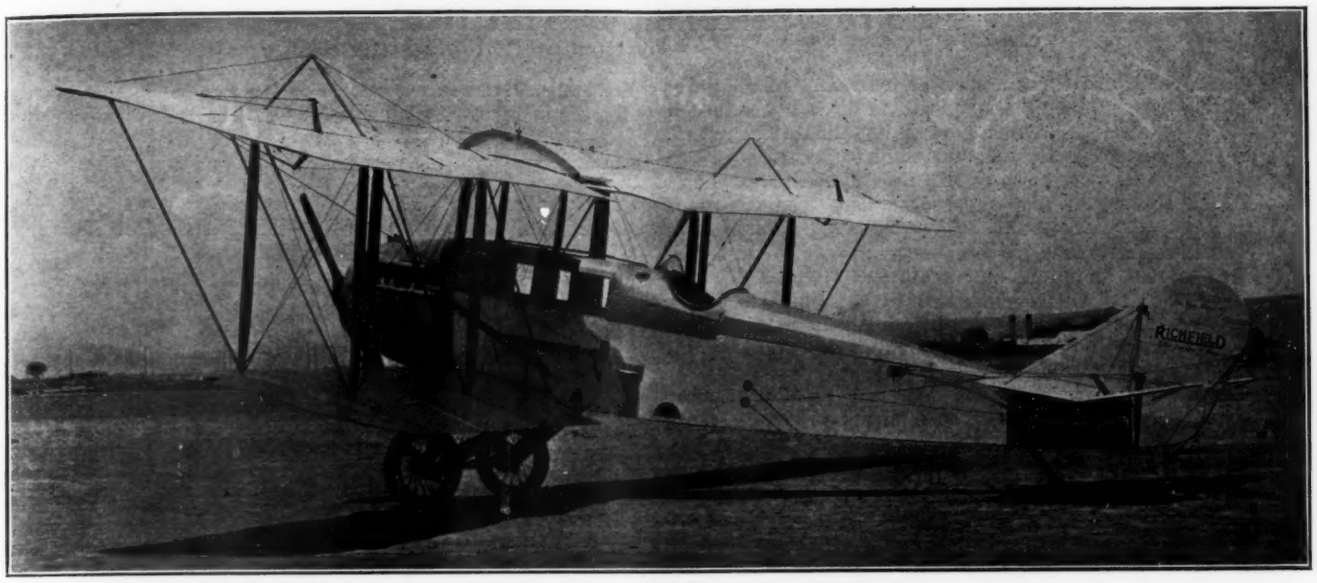
The main gasoline tank is on top of the center section, in the form of a thick wing section. It has a capacity of 35 gallons. The necessity for pressure feed and its complications is eliminated, as it is possible to use gravity feed exclusively.

The pilot's cockpit is situated high, so that the pilot has direct view ahead over the top of the cabin, giving excellent vision at all times. The landing gear and wheels are of the DH type.

The performance, with full load of four passengers, pilot, full tank of gasoline and oil, making a total weight of over 1,000 lb. is, as follows: High speed, 90 m.p.h.; cruising speed, 80 m.p.h.; landing speed, 40 m.p.h.; climb to 1000 ft. 1½ min.; ceiling, 10,000 ft.

The Cloudster

The "Cloudster" is a 12-passenger cabin transport. The plane was originally intended for a cross country flight but this was abandoned and Clyde Ryan, owner of the Ryan Flying Company, bought it. The cockpits, of which there were originally two, were open, but Ryan's mechanics converted it into a neat cabin that would comfortably seat a dozen passengers.



The Ryan Standard commercial four-passenger plane (150 or 180 hp. Hispano engine)

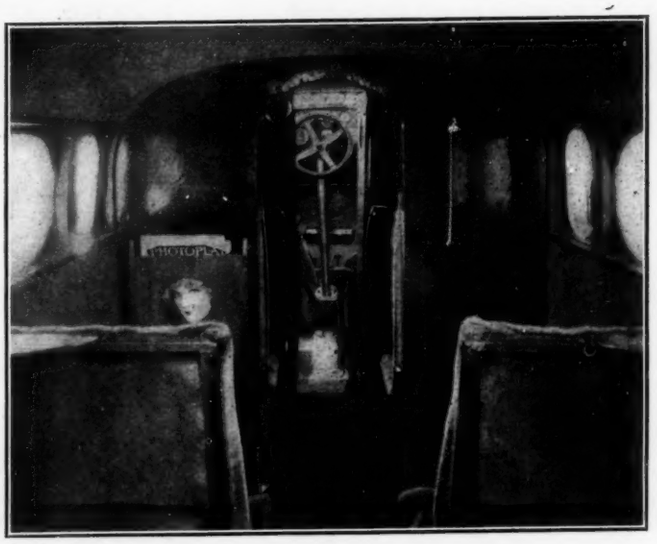
The "Cloudster" has five seats on each side of the cabin with an aisle in the middle. One seat is in the front beside the pilot, who is apart from the passengers and has a clear vision, and the twelfth seat is between the last two seats in the cabin. Everything in the cabin is heavily upholstered with velour, so as to allow the minimum of sound and the maximum of riding comfort. Each seat has a clear glass window through which the occupant may look and have an unobstructed vision.

Performance

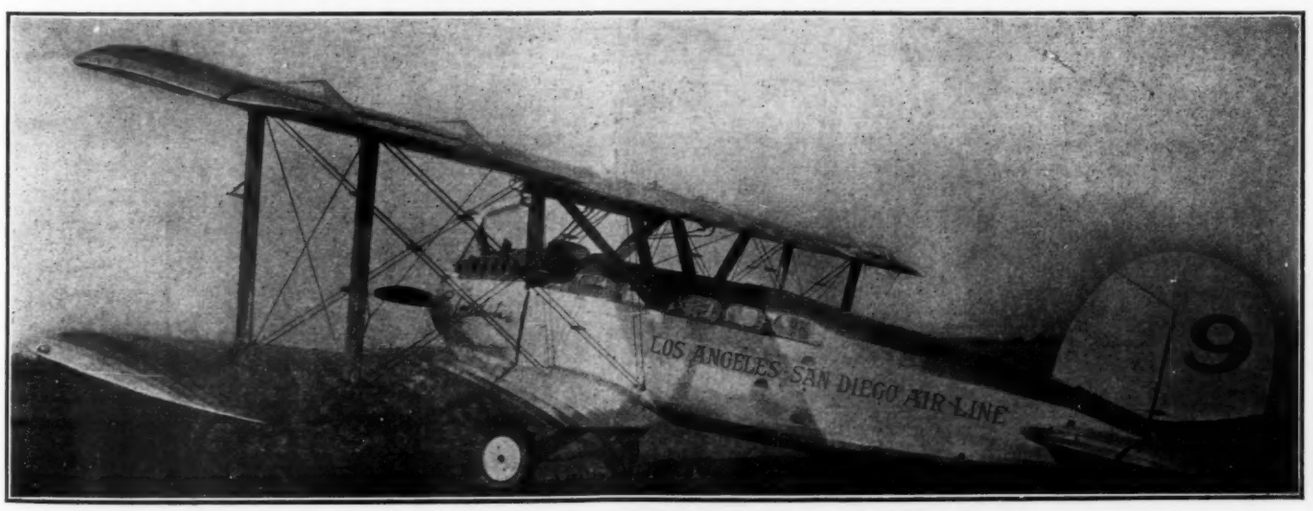
In appearance, the "Cloudster" greatly resembles the "round-the-world" cruisers. It has a 400 hp. Liberty engine and gas capacity of more than 125 gallons. Its speed is 110 miles per hour, with a cruising speed of 90 miles per hour, and a landing speed of 45 miles per hour. The exhaust from each "bank" joins in front of the engine and reverses over the centersection, extending about 12 inches. The baggage compartment is in the rear of the passenger cabin and has a streamline finish, conforming with the rest of the plane.

The big plane is used for sightseeing trips and also on the Los Angeles-San Diego Airline.

This plane represents probably one of the very first cabin passenger airplanes built in this country. In carrying twelve passengers on 400 hp., the performance can be considered extremely good, especially in comparison with many other passenger airliners in use abroad, although it is probable that the future will see far greater loads carried on the same power, and economy thereby gained.



The interior of the cabin of the Ryan Cloudster



The Cloudster cabin passenger plane used on the Los Angeles-San Diego Airline

The Sikorsky Airliner

With air mail and express services extending to all parts of the country, passenger transportation by air becomes a problem to be developed in the more or less immediate future. While, in many respects, the outstanding questions in the production of efficient and successful mail and express planes and those involved in the design of satisfactory passenger machines are very closely allied, yet there are problems in the production of passenger machines, especially large airliners, which call for specialized attention.

In this field the Sikorsky Manufacturing Corp. has long carried on extensive pioneer work and the large passenger airliner, S.29A, produced by this company, is now well known. The plane is a very large twin-engine cabin passenger machine employing Liberty engines. It is a biplane of more or less conventional design with two interplane bays, the chord of the upper wing being greater than that of the lower, as is also the span of the upper wing. The pilot is provided with a roomy cockpit situated well back along the fuselage, where he has an excellent range of vision in all directions.

Extending from the pilot's cockpit to the nose of the machine is the passengers cabin. It is exceptionally roomy and comfortable, providing room for ten passengers and measuring 20 ft. by 4 ft. by 6 ft. Windows around the nose and sides offer splendid vision and ventilation is well provided for. Communication is arranged between the pilot's cockpit and the cabin by means of a full-sized door in the rear. The cabin is free of all bracing interference and there is very little noise when in the air, vibration also being at a minimum.

As regards the structural features of the S.29A, the general construction, which is mainly of metal, is strong and simple and particularly promising from the production point of view. Steel tubing is employed for wing spars and longerons while duralumin forms the wing ribs and parts of the fuselage.

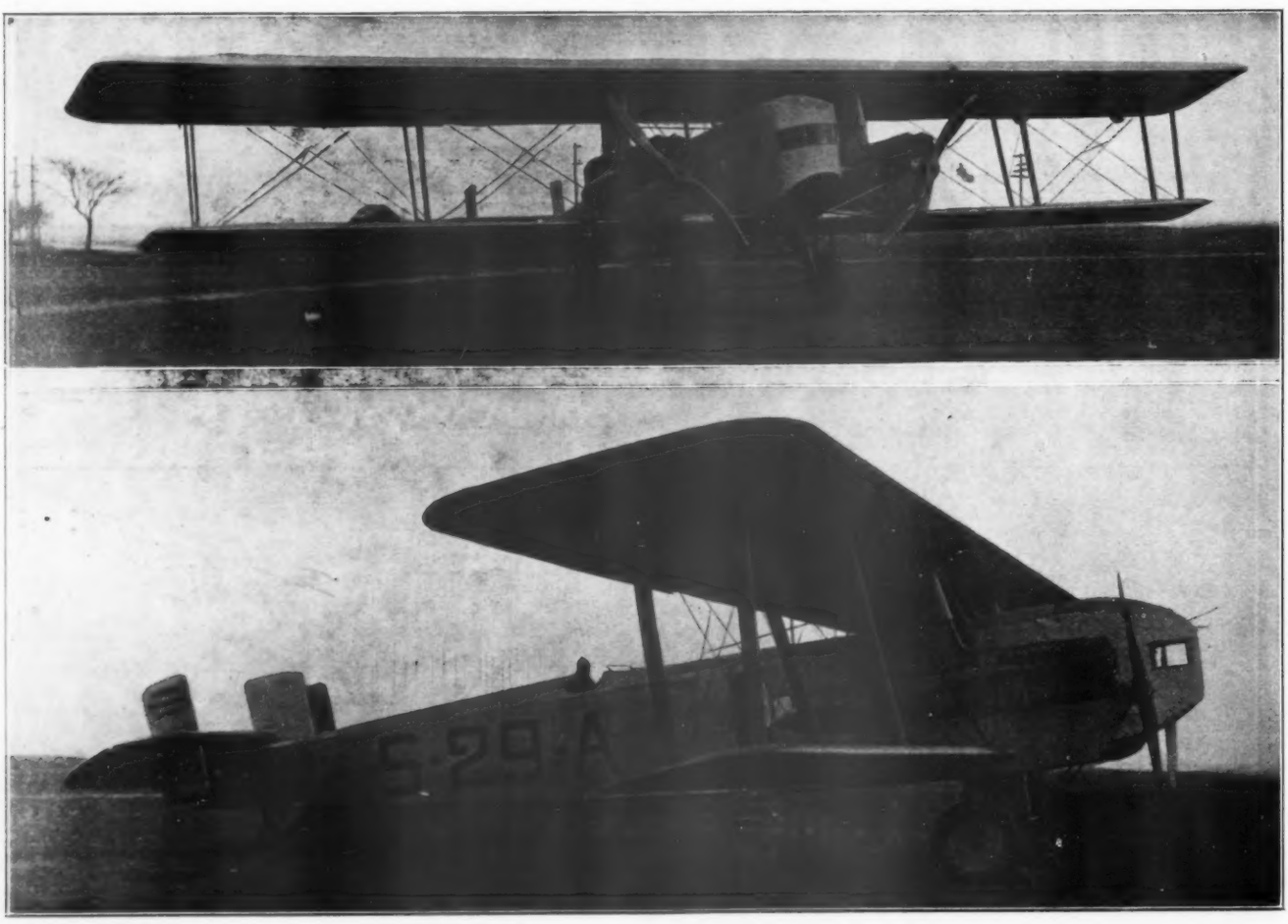
The following are the general characteristics of the S.29A plane:

Span, upper wing	69 ft.
Span, lower wing	63 ft.
Chord, upper wing	10 ft. 3 in.
Chord, lower wing	5 ft.
Overall length	49 ft. 10 in.
Overall height	13 ft. 6 in.
Total wing area	992 sq. ft.
Area of tail	58 sq. ft.
Area of ailerons	72 sq. ft.
Area of elevators	50 sq. ft.
Area of rudders	38 sq. ft.
Wing section	Sikorsky 18 (mod. Gott. 436)
Max. speed, corrected to standard air at 550 ft.	111.2 m.p.h.
Min. speed	55.6 m.p.h.
Service ceiling	12,300 ft.
Climb to 5,000 ft.	8.8 min.
Climb to 10,000 ft.	23 min.

The S31 Type

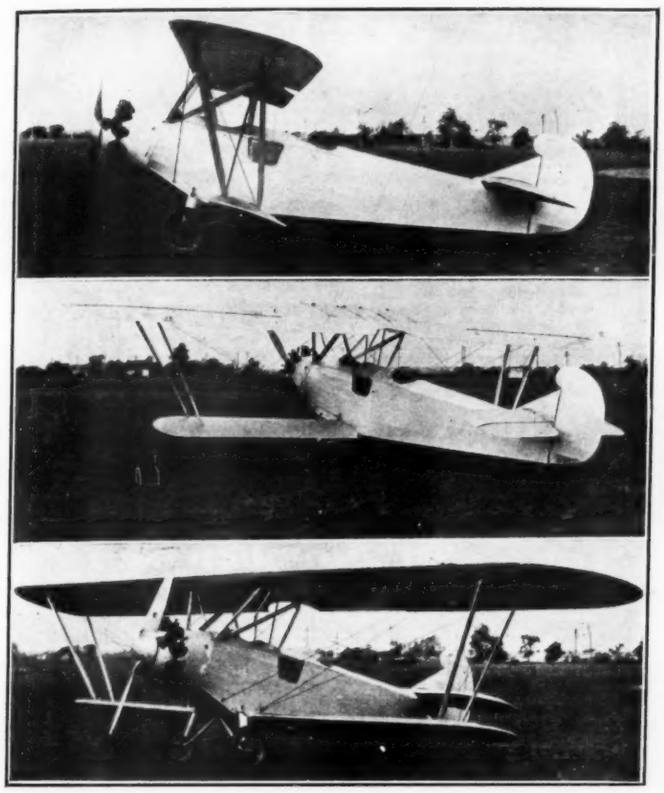
In addition to the S.29A, the single engine Sikorsky S31 plane is available in several modifications especially suited to various classes of commercial transport work. Equipped with a Wright Whirlwind air-cooled radial engine of 200 hp., the S31 is a comparatively small biplane type with an all-metal fuselage framework. The fuselage is built of square steel tubing assembled with bolts and rivets, no welding being used on structural parts. The wings are of wood, covered with fabric.

The S31-M type plane is especially constructed for mail and express transportation. The pilot is located in a comfortable cockpit in the rear of the plane with the mail com-



Front and side views of the Sikorsky S29A transport plane, fitted with two 400 hp. Liberty engines

partment in front having a capacity of 60 cu. ft. and capable of carrying 800 lb. of mail matter. The type P, is equipped as a passenger taxi-plane, with the pilot in front and



The Sikorsky S31 plane

a comfortable four-passenger semi-closed cabin in the rear, and lastly, type PH type is designed with special attention being given to the requirements of photographic work.

The general characteristics of the S31 are as follows:

Upper wing span	45 ft.
Lower wing span	32 ft.
Total area of wing	366 sq. ft.
Overall length	26 ft.
Weight empty	1750 lb.
Normal useful load	1200 lb.
Wing load	8 lb./sq. ft.
Load per horsepower	15 lb.
Cruising speed	110 m.p.h.
High speed reached	126½ m.p.h.
Landing speed	35 m.p.h.
Ceiling: With one passenger	19,000 ft.
Ceiling: With normal useful load	14,000 ft.
Payload for cruise of 500 mi.	800 lb.
Gasoline tank capacity (for about 1000 mi.)	108 gal.
Safety factor	8½

The Alexander Eaglerock

The new Alexander Eaglerock plane is a machine which has recently undergone its tests and, as a result, has proved itself of considerable value in light commercial work. It is a three place passenger biplane of conventional design with a single interplane bay. It is equipped with an OX-5 engine and has a very good performance, with a high speed of 89 m.p.h. and a landing speed of 38 m.p.h. The plane, of course, can be employed for air mail and express if necessary.

The general characteristics of the Eaglerock are as follows:

Span, upper wing	36 ft.
Span, lower wing	38 ft.
Overall length	24 ft. 5 in.
Overall height	9 ft. 4 in.
Total wing area	360 sq ft.
Weight, empty	1,100 lb.
Weight, with oil and water	1,180 lb.
Useful load, pilot, 2 passengers, 35 gal. fuel	760 lb.
Weight, loaded	1,940 lb.
Wing loading	5.4 lb. per sq. ft.
Power loading, (OX5)	21.6 lb. per hp.
Safety factor	7
Wing section	Clark Y
Landing speed	38 m.p.h.
High speed	89 m.p.h.
Climb, full load	600 ft. per min.
Climb, pilot alone	900 ft. per min.
Ceiling, full load	13,000 ft.
Ceiling, pilot alone	18,000 ft.
Service ceiling, full load	11,000 ft.
Service ceiling, pilot alone	15,700 ft.
Gliding Angle	1 in 10.5

The Douglas Air Mail Plane

One of the most successful airplanes designed and produced in response to the call of the Postoffice Department early last year for air mail planes to fullfill specific requirements, was the Douglas mail plane which is now in use by the Air Mail Service. This type of machine is also to be used by the Western Air Express on the air mail route from Salt Lake City to Los Angeles.

The machine is a normal single bay biplane with the conventional form of axleless undercarriage. The fuselage is made in two detachable sections, the engine center section and rear section. The engine section is of chrome molybdenum steel tube construction, while the rear section is of chrome molybdenum steel tubing and carbon steel tubing, welding and brazing being used throughout.

The wings are of standard wood beam and built up rib construction. The upper section is made in two panels hinged at the center in such a manner as to make the beams continuous. The lower section is made in two panels hinged at the stub wing which is built up integral with the fuselage. The leading edges, top and bottom, are covered with veneer.

The vertical fin and horizontal stabilizer are of standard wood beam and built up rib construction, with the elevators and rudder made of duralumin tubing.

The gasoline tanks are made of sheet aluminum and are mounted in the lower wing which is expanded to a streamline section to give proper capacity. They are so hung in the wing that they may be dropped at will by the pilot. A 10 gal. gravity tank also is located in the upper right wing.

The cargo and mail space, which is situated directly behind the engine, a Liberty XII, measures 2½ ft. by 3½ ft. by 6 ft. and has a capacity of 55 cu. ft., while there is an additional space, suitable for luggage or more mail, with a capacity of 12 cu. ft., situated under the pilot's cockpit.

The general characteristics and performance of the plane are given herewith:

Area, upper wings, excluding ailerons	186 sq. ft.
Area, lower wings, excluding ailerons	175 sq. ft.
Area, four ailerons	50 sq. ft.
Area, total	411 sq. ft.
Area, stabilizer	35 sq. ft.
Area, elevator	20 sq. ft.
Area, rudder	10.35 sq. ft.
Area, fin	7 sq. ft.
Chord	68 in.
Gap	72 in.
Incidence angle, top and bottom	0 deg
Dihedral angle, top and bottom	2 deg.
Length of fuselage	25 ft.
Width of fuselage	30 in.
Height of fuselage	43 in.
Gas tank capacity	130 gal.
Engine	Liberty 12
Wing section	Clark Y
Useful load (inc. 720 lb. fuel)	1800 lb.
Fuel capacity	130 gal. (normal)
Fuel capacity	170 gal. (with auxiliary tank)
Pay load (exclusive of pilot)	1000 lb.
Max. speed	145 m.p.h.
Minimum speed	52 m.p.h.
Cruising speed	125 m.p.h.
Range—approximately	700 miles with standard wing tank installation.
Max. ceiling (full load)	17,500 ft.

428540

The Aerial Mercury Air Mail Plane

In the class of airplanes extremely suitable for trunk air mail route operation is the Mail plane designed and produced by the Aerial Service Corp. of Hammondsport, N. Y. The machine made its appearance early in 1925.

The plane is of biplane form, having no stagger, a horizontal top wing, and 1½ deg. dihedral on the lower wing, one pair of outer struts, and Clark-Y wing section.

The wing beams are of built-up box section, the sides being formed of two-ply diagonal spruce planking, all glued and nailed together with galvanized nails, while the ribs are of built-up truss type.

Fuselage Construction

The fuselage is built up with four large section longerons, braced with built-up bulkheads, and covered with 3/16 in. veneer. It is 29 in. wide at the top, and 48 in. at the bottom, giving the pilot unrestricted view in all directions downward without moving his position.

Another feature is the providing of tunnels in each lower wing, which allows the pilot to see the landing wheels at all times, thus avoiding perhaps a bad crash in the event of a burst tire of which the pilot would otherwise be unaware.

The engine is a standard 400 hp. Liberty XII, mounted in a steel tube frame. The complete power plant is easily removable as a unit, for quick replacement. A metal covered bulkhead immediately behind the engine forms a fire-wall between it and the mail compartment.

The mail compartment has a capacity of 56 cu. ft., and is completely lined with sheet duralumin and fitted with hickory battens to take the wear of the mail sacks. A large, double hinged door provides quick and easy access to the compartment, and is fitted with approved lock and two heavy straps.

The pilot's cockpit is roomy and comfortable, being lined with veneer, and having an adjustable seat. Three emergency controls are fitted to the dashboard, one for releasing all gasoline from the main tank, one for releasing a plow blade in the tail skid, for use to avoid a crash on a restricted landing field and another to release Pyrene fluid from a tank at 100 lb. pressure, which is sprayed over the engine from pipes carried all around the engine frame.

The plane has been designed to take an additional pair of smaller lower wings in place of the standard ones capable of being attached quickly to the same standard fittings. The speed of the machine is then increased by about 10 m.p.h.

The general characteristics of the plane are as follows, the second column of figures indicating the characteristics of the plane with the small lower wings:

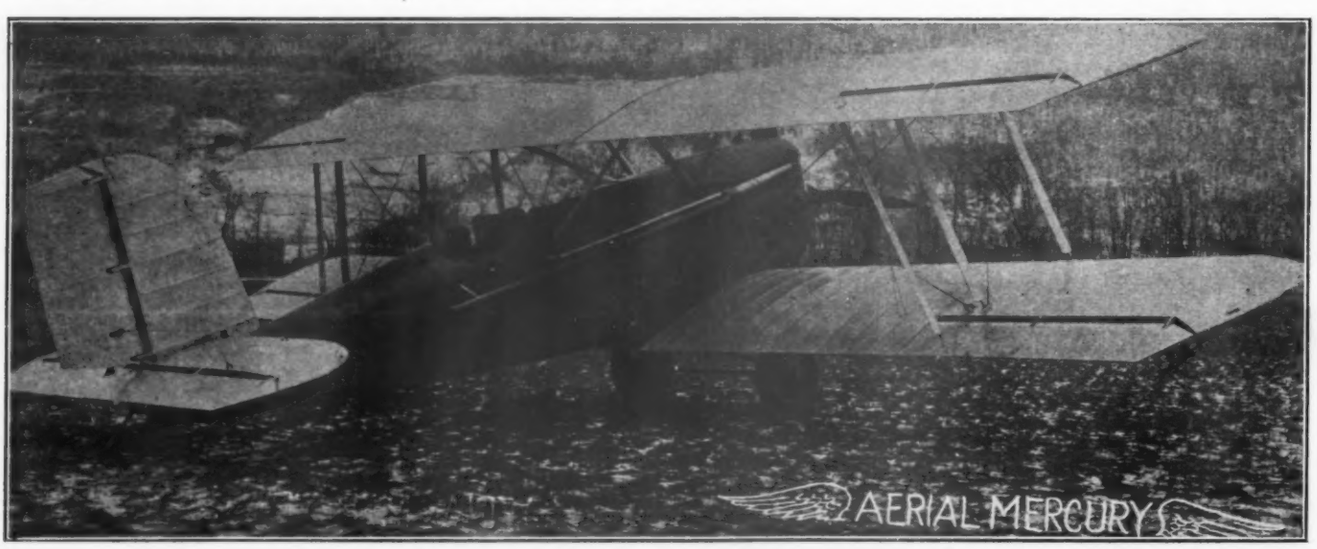
Weight:		
Weight empty	3640 lb.	3490 lb.
Useful load	1875 lb.	1875 lb.
Mail 1000 lb.		
Pilot 180 lb.		
Gasoline 600 lb.		
Oil 75 lb.		
Equipment 20 lb.		
Weight, full load	5515 lb.	5365 lb.
Areas and Dimensions:		
Upper wing (including ailerons)	298.20 sq. ft.	298.20 sq. ft.
Lower wing (including ailerons)	300.52 sq. ft.	167.50 sq. ft.
Total wing area	598.72 sq. ft.	465.70 sq. ft.
Span, upper wing	42 ft. 11 in.	42 ft. 11 in.
Span, lower wing	47 ft. 1 in.	33 ft. 4 in.
Overall length	28 ft. 6 in.	28 ft. 6 in.
Overall height (tailskid on ground)	11 ft. 4 in.	11 ft. 4 in.
Chord, upper wing	7 ft. 0 in.	7 ft. 0 in.
Chord, lower wing	7 ft. 0 in.	6 ft. 0 in.
Gap	6 ft. 6 in.	6 ft. 6 in.
Stagger	—	3 in.
Performance:		
High speed	125 m.p.h.	135 m.p.h.
Cruising speed	110 m.p.h.	120 m.p.h.
Stalling speed	51.9 m.p.h.	56.8 m.p.h.
Initial climb	1140 ft. per min.	1110 ft. per min.
Absolute ceiling	16400 ft.	14900 ft.
Range at cruising speed	500 miles	560 miles
Duration at cruising speed	4.75 hr.	4.75 hr.

The Mercury Jr.

The Mercury Jr., another plane produced by the Aerial Service Corp. is an all-purpose plane, designed for high performance, low initial and maintenance cost. It is fitted in the following types: Mail plane, 500 lb. pay load; training plane; pilot and two-passenger plane; and camera plane, powered with either Wright J4, 200 hp. air-cooled radial, or C6A, 160 hp. water-cooled engines.

The machine is a single bay biplane, with steel tubular center section supporting the streamlined aluminum welded 43 gal. fuel tank, thereby eliminating the usual weight of ribs and covering, the tank serving for both.

The fuselage is of welded steel tubular construction, with quickly removable engine mount of the same construction. The fuselage proper is covered with fabric, while the engine cowling, etc., is of aluminum well streamlined in shape. The pilot's cockpit is roomy, with a folding seat, under which a suit case may be carried. Another case may be carried under the front seat in the three-seater type. Back of the pilot, between the upper trussing and turtle back, is a roomy lubgage compartment, while another is situated in the front cockpit above the extra 40 gal. fuel tank, when such is carried for long flights.



General view of the Aerial Mercury Air Mail plane

Yackey's Annual Spring Sale

Two place, OX5, dual control Yackey Sport, only used 10 hours, guarantee motor and plane to be in excellent condition. Sale price $1350.00; delivered any place for 10c per mile.

One rebuilt OXX6 Canuck, dual control, fuselage just rebuilt and recovered, guaranteed to be in excellent condition, fine looking and flying ship at $1050.00.

One rebuilt OXX6 Canuck, dual control, three place, reconditioned throughout, guaranteed to be in excellent condition, a very good buy at $1150.00.

Single place OX5 Yackey Sport, 38 gallon gas capacity, complete, easy to fly, with overhauled OX5 motor $1075.00, without motor $875.

One Lincoln Standard Tourabout, 3 place, 180 Hisso motor, has had only 6 hours since overhaul, new Hamilton prop, new cartridge core radiator, 50 gallon gas tank, fine shape $1500.00.

OX5 motors, just rebuilt in our shops, guaranteed in excellent condition, will demonstrate on test stand before shipping, only few left $225.00.

Liberty 6 Hall Scotts, parts interchangeable with Liberty 12 parts. Excellent type motor 220 HP. Only weigh 530 Lb. Low gas and oil consumption. These motors excellent condition just test run, only four left; big bargain at $550 each.

Lot of Hisso parts, will send list price $450.00, well worth $700.00.

Lot of four Renault Motors 300 HP. 12 Cylinder with many extra parts $875.00.

Canuck wing covers, lowers only, real Irish linen $15.00.

Irish linen Grade AA, 36″ wide, 90c per yd.

Nitrate dope, new stock 5 gallon cans $10.00.

Thread, tape, varnish, enamels, lacquers,—all colors, safety wire, fiber lined gas hose,—all sizes 60c per foot. New shock cord 20c per foot, windshields stock-$2.00 per lb. New OX5 rings-50c, new OX5 valves 50c. Hose clamps 10c each. All kinds of new stock for building, overhaul and repair work. Goggles, new type $4.50 each. Special helmets $5.00. Helmets in dozen lots $4.50 each. 12 foot distant type thermometers, radiated, new, original box $8.50. New Stock 26x4 casings $11.40, new tubes $2.75. TM fuselage, like new, complete, less instruments and covers-$225.00. TM fuselage converted to two place OX5 less motor and cowl $475.00. Steel tubing motor mounting for OX5 in TM $75.00. Nose spinner for OX5 TM $15.00. Lower TM wings, new government covers $15.00 crated $20.00. TM Landing gear vees, new, each $10.00. 26x4 wheels for JN4, Canuck OX TM $5.00 each. DH landing gear vees, wood $7.50 per pair. THREE BRAND NEW OX5 JENNIES, AS RECEIVED FROM THE AIR MAIL, $900.00 EACH. THESE SHIPS ARE COMPLETE IN EVERY DETAIL AND HAVE NEW CURTISS OX5 MOTORS INSTALLED.

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The Mercury Jr. plane

The wings of box beam, trussed rib, and dural compression strut construction and covered with fabric, are braced with streamlined wires and N struts of streamline steel tubing, the ends of which are adjustable for alignment.

General details of the plane are as follows:

With Wright J4 engine:

Capacity	500 lb.
Span	32 ft. 10 in.
Length	21 ft. 6 in.
Height	9 ft. 6 in.
Area (total)	305 sq. ft.
Chord	5 ft.
Gap	6 ft.
Stagger	29.5 in.
Dihedral	2 deg.
Wing section	Clark Y
Mail compartment	25 cu. ft.
Engine	200 hp.
Weight empty	1570 lb.
Useful load	1020 lb.
Pay load (mail)	500 lb.
Weight, full load	2590 lb.
High speed	130 m.p.h.
Landing speed	52.3 m.p.h.
Absolute ceiling	16,100 ft

With Curtiss C6A the following characteristics differ:

Length	22 ft. 9 in.
Engine	160 hp.
Useful load	880 lb.
Pay load (mail)	400 lb.
Weight fully loaded	2450 lb.
High speed	120 m.p.h.
Landing speed	50.9 m.p.h.
Absolute ceiling	13,750 ft.

The Glenn Martin Commercial Plane

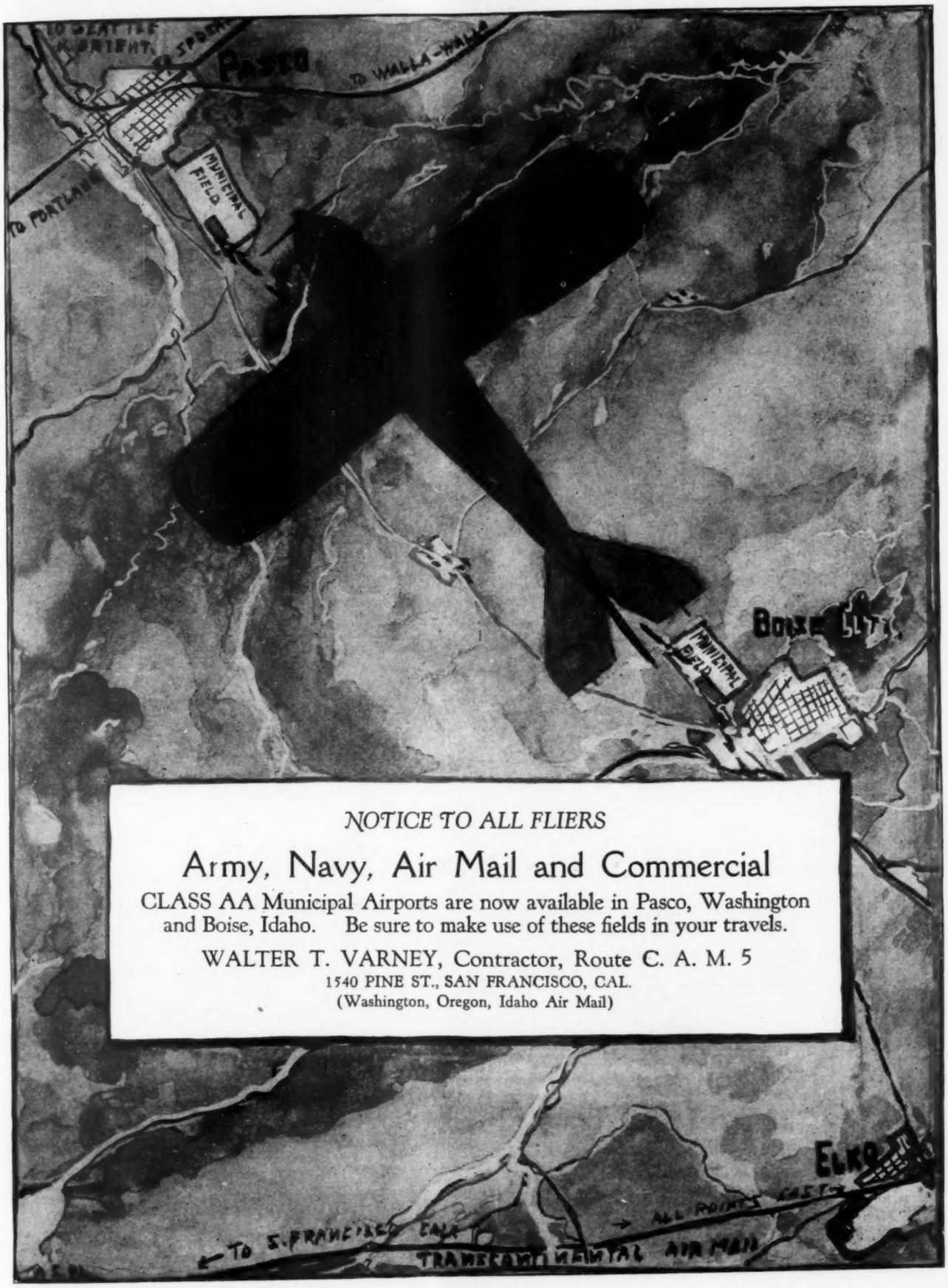
The Glenn L. Martin Model 70 Commercial airplane represents a very efficient combination of speed and load carrying capacity. Equipped with the 200 hp. Wright model E4 engine, the plane has a high speed of 112 m.p.h., a landing speed of 45 m.p.h. with a pay load capacity of 750 lb. and a cruising range of 550 miles. A clear, enclosed cargo space of 28 cu. ft. is provided. The fuselage is constructed of birch plywood supported by a spruce frame. The wings are supported by birch plywood box-type spares with Martin trussed spruce ribs. They are covered with fabric and the leading edge is reinforced with plywood to the front spar.

The engine mounting is of steel tube, with wood bearers. The radiator is mounted below the engine where it receives the full blast of the slip-stream through an especially designed opening.

The general details of the Martin Commercial Model 70 plane are:

Span	38 ft.
Length	27 ft.
Height (overall)	12 ft.
Total wing area	365 sq. ft.
Stagger	16.5 in.
Dihedral	Nil
Chord	64.5 in.
Gap	58 in.
Gross weight (full cargo)	3500 lb.
Weight empty, with water	2100 lb.
Useful load	1400 lb.
Gas capacity (64 gal.)	385 lb.
Per cent useful load	40%
Maximum ground speed	112 m.p.h.
Landing speed, full load	45 m.p.h.
Rate of climb at zero altitude	800 ft. per min.
Altitude in 10 min.	6500 ft.
Service ceiling	17000 ft.
Cruising radius 80 gal. gas	550 miles

The Glenn Martin Commercial plane



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(Washington, Oregon, Idaho Air Mail)

Wright–Bellanca Monoplane

In a class entirely by itself and undoubtedly representing a landmark in the development of air transport equipment in the United States, is the Wright-Bellanca cabin passenger carrying monoplane. It combines, not only the high speed required in successful passenger air transportation but also the qualities of economic operation to a degree almost unsurpassed in all other passenger carrying planes throughout the world.

The plane seats five passengers comfortably and, if necessary, one more passenger may be carried in lieu of baggage. For express and mail carrying, the large cabin space of 122 cu. ft. gives good cargo room. Special effort has been made in the design to reduce construction costs and the single untapered semi-cantilever wing represents the most economical type of construction..

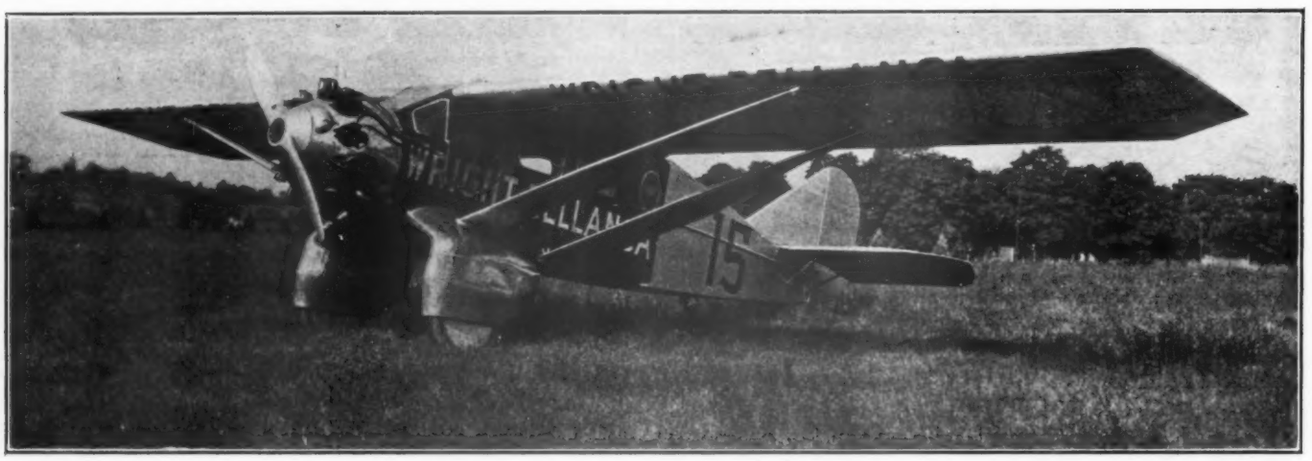
The passengers are accommodated in a well-ventilated cabin fitted with comfortable chairs. Noise is minimized as far as possible and conversation is not drowned by propeller or exhaust noises. The vision from the passengers' cabin, both ahead and down on both sides, is excellent in all conditions, for the pilot as it is also for the passengers.

There are nine windows in the cabin, three large and one small, one on each side and one large one in the front, giving the pilot, as well as the passengers, excellent vision. The landing gear is of cantilever construction, somewhat novel in appearance, and is built of duralumin and chrome molybdenum tubing. It is completely enclosed in a streamline duralumin covering. The shock absorbers are readily rewound, being accessible in spite of the unusual undercarriage construction. The engine is a Wright Whirlwind air-cooled 200 hp. radial.

The general characteristics of the Wright-Bellanca are as follows:

Span	45 ft.
Chord	6 ft. 7 in.
Length	24 ft. 9 in.
Height	8 ft 5 in.
Wing area	272 sq ft.
Fuel capacity	63 gal.
Oil	5½ gal
Weight, empty	1,790 lb.
Weight with gasoline, oil and pilot	2,380 lb.
Weight of pay load of five pasengers	3,230 lb.
Weight of pay load	850 lb.
Weight per hp. with gasoline, oil and pilot	11.9 lb.
Weight per hp. with pilot and 850 lb. pay load	16.1 lb
Weight per sq. ft. with gasoline, oil and pilot	8.75 lb.
Weight per sq. ft. with pilot and 850 lb. pay load	11.8 lb.

The machine has recently undergone a series of very careful tests. With a total useful load of 1,573 lb. made up of the pilot, fuel and a pay load of over 1,000 lb., the top speed was 135 m.p.h. At a speed of 115 m.p.h. the consumption of fuel was indicated as 13.5 gal. per hr., the engine then developing 138 hp. At a speed of 100 m.p.h., the consumption was 9.7 gal. per hr., or 10.3 miles per gal. The machine takes off with a pay load of 1508 lb. in 16 sec., the run being only 750 ft.



The Wright-Bellanca cabin plane. The somewhat novel form of cantilever undercarriage with its very clean and robust construction, is clearly shown.

The Fokker Commercial Airplanes

The commercial monoplanes produced by the Atlantic Aircraft Corp. at Hasbrouck Heights, N. J., are among those which will be used extensively in air transportation activities throughout the country. The Fokker Universal, a small monoplane compared with the now well-known three-engine plane, has, nevertheless, very good load carrying capabilities and is, in fact, the plane decided upon by Colonial Air Transport, Inc., for use on the Boston-New York Air Mail service.

The main structure of the fuselage is entirely of welded steel tube, except in the case of the large monoplane cantilever wing which is of wood covered with veneer, making a very strong and rigid structure. The wing is normally constructed in one piece. The cabin behind the pilot's cockpit seats four passengers comfortably, leaving ample space for luggage. The inside dimensions of the cabin space are 8 ft. 4 in. long by 3ft. 6 in. wide and 5 ft. 2 in. to 4 ft. 6 in. high. These figures give some idea of the load space available in the mail type plane. The engine is a single Wright Whirlwind of 200 hp.

The general details of the machine are as follows:

Span	47 ft.
Length	33 ft.
Height	8 ft.
Useful load	
Pilot	180 lb.
Pay load	800 lb.
Fuel (80 gal.) and Oil (5 gal.) for 6 hr. at cruising speed	520 lb.
Total load	1,500 lb.
Performance with full load	
High speed	122 m.p.h.
Cruising speed (115 hp.)	[illegible] m.p.h.
Landing speed	40 m.p.h.
Climb to 3,300 ft.	[illegible] min.
Climb to 10,000 ft.	21 min.
Ceiling	14,100 ft.

The F VII Types

There are two other planes of distinct commercial value produced to Fokker designs by the Atlantic Aircraft Corp. They are the F VII type, built as a single-engine machine and as a three-engine plane. This plane resembles the Universal type very closely in appearance and is structurally very similar.

THE OX5 TRAVEL AIR

FOR GENERAL UTILITY PURPOSES REQUIRING HIGH GRADE PERFORMANCE, EASE OF CONTROL, QUALITY, AND SERVICE.

PERFORMANCE WITH 600 LBS. USEFUL LOAD:

HIGH SPEED	100 m.p.h.
LANDING SPEED	38 m.p.h.
SERVICE CEILING	10,000 ft.

PRICE, $3,500 FLY-AWAY WICHITA.

TRAVEL AIR AIRCRAFT 3-PLACE SERIES

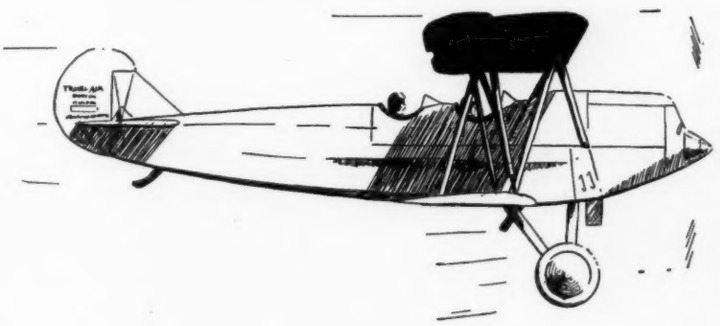
THE C6 TRAVEL AIR

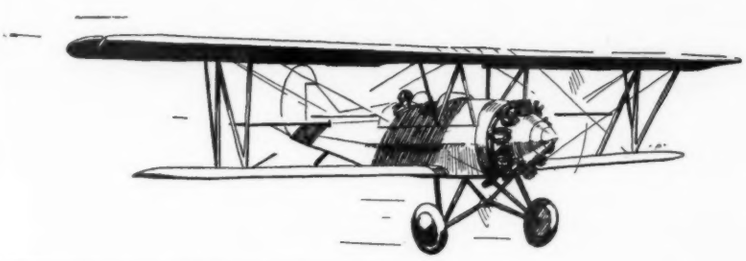
FOR PHOTOGRAPHIC AND EXTENSIVE CROSS COUNTRY WORK.

PERFORMANCE WITH 600 LBS. USEFUL LOAD:

HIGH SPEED	121 m.p.h.
LANDING SPEED	41 m.p.h.
SERVICE CEILING	17,300 ft.

PRICE $7,150 FLY-AWAY WICHITA.





THIS MODEL ALSO SUPPLIED WITH HISPANO MOTORS.

THE WHIRLWIND TRAVEL AIR

FOR HIGH CLASS SERVICE DEMANDING A RESERVE OF POWER, MAIL LINES, DUSTING, EMERGENCY TRANSPORT, ETC.

PERFORMANCE, WITHOUT COWLING, WITH 600 LBS. USEFUL LOAD:

HIGH SPEED	128 m.p.h.
LOW SPEED	38 m.p.h.
CEILING	20,000 ft.
CLIMB to 1300 ft.	1 min.
CLIMB to 10000 ft.	12 min.

PRICE, $9.500 FLY-AWAY WICHITA.

WE SOLICIT CUSTOM MADE AIRPLANES.

TRAVEL AIR MFG. CO.
Manufacturers of 'Travel-Air' Planes
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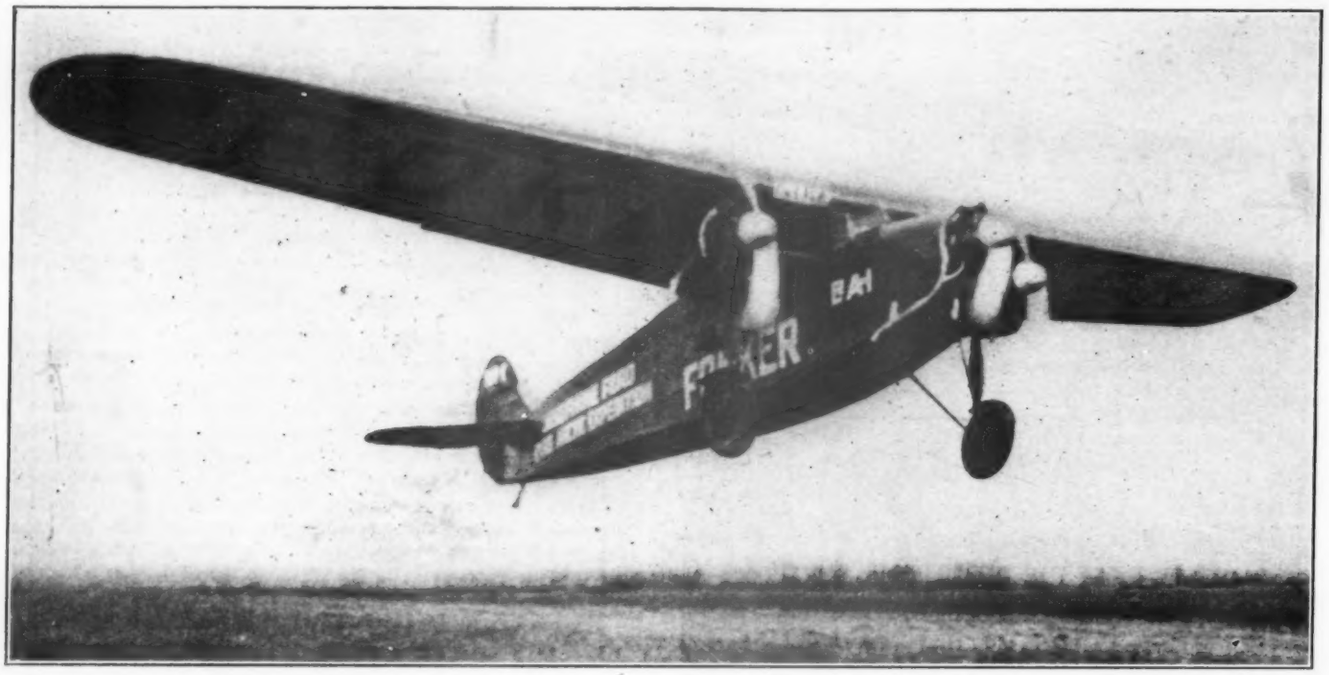
LET US KNOW YOUR SPECIAL REQUIREMENTS.



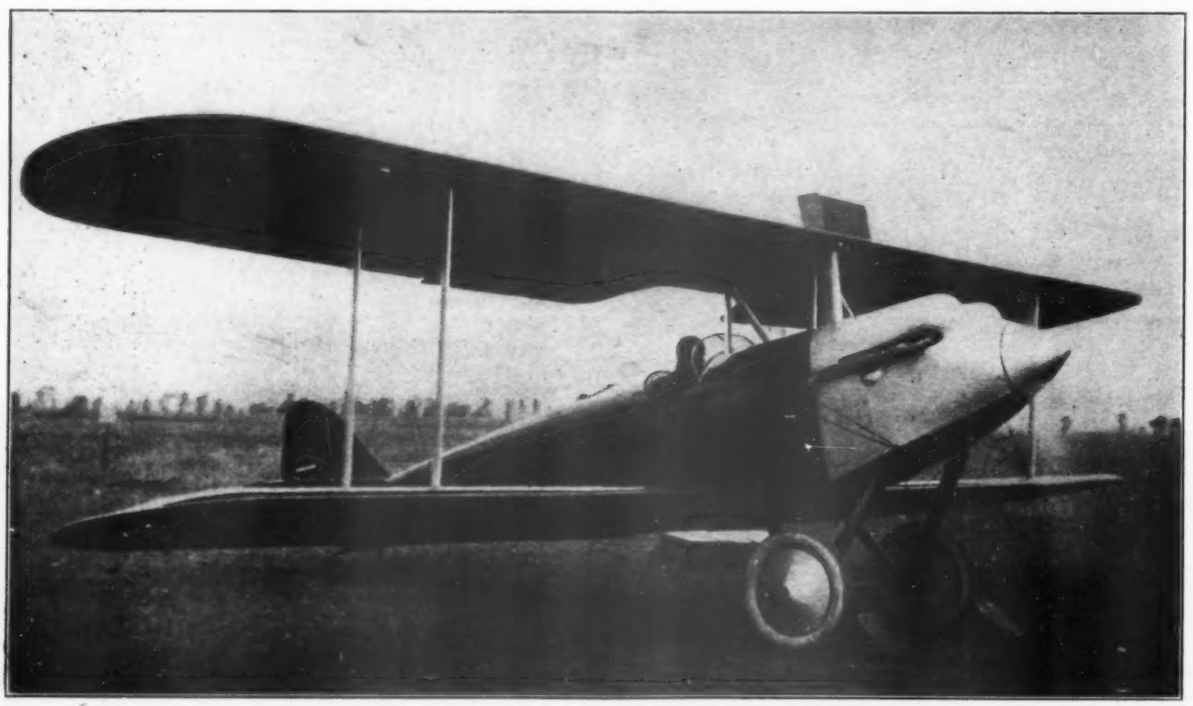
The three-engine Fokker plane. This particular photograph is of the machine to be used by the Byrd Arctic Expedition being tested at Hasbrouck Heights, N. J.

In the standard plane the cabin is fitted for the accomodation of passengers, seats for eight persons being provided. The cabin, from which an excellent lookout is available, measures 12 ft. by 5 ft. with a height of 5 ft. 10 in. The cabin is well fitted and heated for winter flying. The total amount of cabin and luggage space is 493 cu. ft., which makes the plane a very excellent one from the point of view of freight or mail transportation by air.

The general details of the F VII type are as follows:

Dimension	*Type single-engine*	*Type three-engine*
Span	62 ft. 5 in.	63 ft. 3 in.
Length	41 ft. 10 in.	49 ft. 2 in.
Height	12 ft. 7 in.	12 ft. 9 in.
Wing area	646 sq. ft.	
Weight, empty, (equipped)	3850 lb.	
Useful load (Pilot, Passengers, Fuel)	3430 lb.	4000 lb.
Pay load (Passengers, luggage)	2100 lb.	2340 lb.
Top speed	121 m.p.h.	127 m.p.h.
Cruising speed	105 m.p.h.	105 m.p.h.
Landing speed	48 m.p.h.	
Climb to 10,000 ft.	41 min.	24.2 min.
Ceiling	11,000 ft.	13,950 ft.

The single engine plane is equipped with a Liberty XII engine of 400 hp. while the three-engine machine is fitted with three Wright Whirlwind engines of 200 hp. each.



The Laird Commercial of the type to be employed on the Chicago-Minneapolis Air Mail Route

SIKORSKY

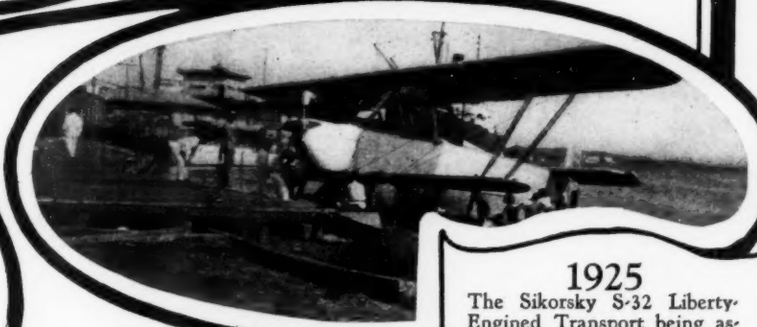
Planes excel-

For Military or commercial purposes

1917
The Sikorsky Four-Engined Bomber

The Sikorsky multi-motored airplanes rendered excellent service to the Russian Army as battle planes, as confirmed by official documents, and made about 400 raids over the enemy territory, representing a total distance of over 120,000 kilometers. Only one airplane, brought down by enemy fire, failed to return to its base; long distances were covered in spite of being badly damaged by shots of the enemy, several times with one and even two motors stopped at the same time.

—Official War Records



1925
The Sikorsky S-32 Liberty-Engined Transport being assembled on pontoons on Magdalena River, in Columbia, South America.

Extract from letter of January 31st, 1926, from Capt. Homer Berry, Chief Pilot, Andian National Corporation, Ltd., Cartagena, Columbia:

"I took four men, averaging 180 lbs., and 1400 pounds of money which amounted to $184,000 in paper and silver up the River the other day besides 125 gallons of gas—and got off where another plane of similar size had to unload a part of seven hundred pounds to get off and beat them in by over one hour and a half."

SIKORSKY MFG. CO.
250 W. 57TH ST., NEW YORK CITY
Roosevelt Field, Westbury, Long Island

SIKORSKY LIBERTY-ENGINED S-32,
Useful load 2,200 lbs.

The Waco 9 Commercial Plane

A recent production of the Advance Aircraft Co. is a three-place biplane designed for commercial work. The primary thought in its conception was to produce a truly efficient plane powered with the Curtiss OX5 which would possess weight carrying capabilities and maneuverability together with a sufficient speed range to meet the demands of the commercial operator and private owner.

Construction

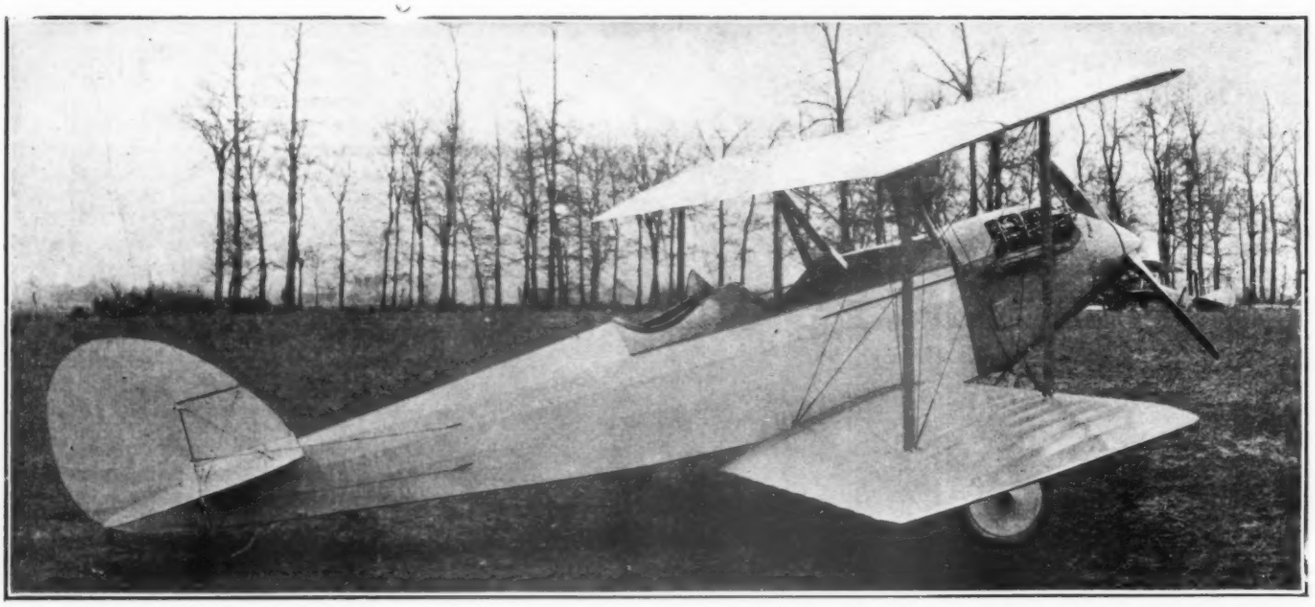
The spars of the wings are of spruce of large section, routed to I section where possible and left rectangular where subjected to the greatest stress. The wing ribs are of the Pratt truss type, accurately formed of spruce battens and struts joined wih three-ply mahogany gussets. Nose ribs are of channel section duraluminum.

The fuselage is of steel tubular construction throughout and is extremely sturdy, special attention having been given to the distribution of lift and landing strains.

The entire tail unit is constructed of steel. The elevators are separate and are actuated by control wires of large dimension, and the rudder is balanced.

The general details of the plane are as follows:

Length, overall	23 ft. 4 in.
Height, overall	8 ft. 10 in.
Span, upper wing	29 ft. 6 in.
Span, lower wing	29 ft. 6 in.
Chord, upper wing	5 ft. 3 in.
Chord, lower wing	5 ft. 3 in.
Gap	5 ft. 0 in.
Stagger	1 ft. 4 in.
Airfoil (wing section)	Aeromarine 2A
Angle of incidence, upper wing	2 deg.
Angle of incidence, lower wing	2 deg
Dihedral, upper wing	none
Dihedral, lower wing	2 deg.
Span, tailplane	10 ft. 0 in.
Area of wings, including ailerons	296 sq. ft.
Weight empty, with water	1090 lb.
Useful load	800 lb.
Total weight	1890 lb.
Wing loading	6.39 lb./sq. ft.
Power loading	21.00 lb./hp.
Fuel capacity	37 gal.
Endurance at cruising speed	5 hr.
Range	400 miles
Maximum speed, full load	92 m.p.h.
Max. speed with cross country propeller	99 m.p.h.
Landing speed, full load	32 m.p.h.
Climb	500 ft per min.



The Waco 9 Commercial plane

The Lincoln–Standard Plane

The Lincoln-Standard LS5 was produced in 1923 by the Lincoln-Standard Aircraft Corp. of Lincoln, Neb., to meet the demand for a practical five-place commercial passenger airplane. The machine has been in production and the type is in extensive use.

The fuselage is of general rectangular cross section, the maximum depth being 52 in., and the maximum width 33¾ in. The passenger compartment is 57 in. in length and is upholstered with leather and seats four passengers with comfort. The passengers are protected from the wind by the partially enclosed portion of the cockpit. Three steps lead to the passenger cockpit.

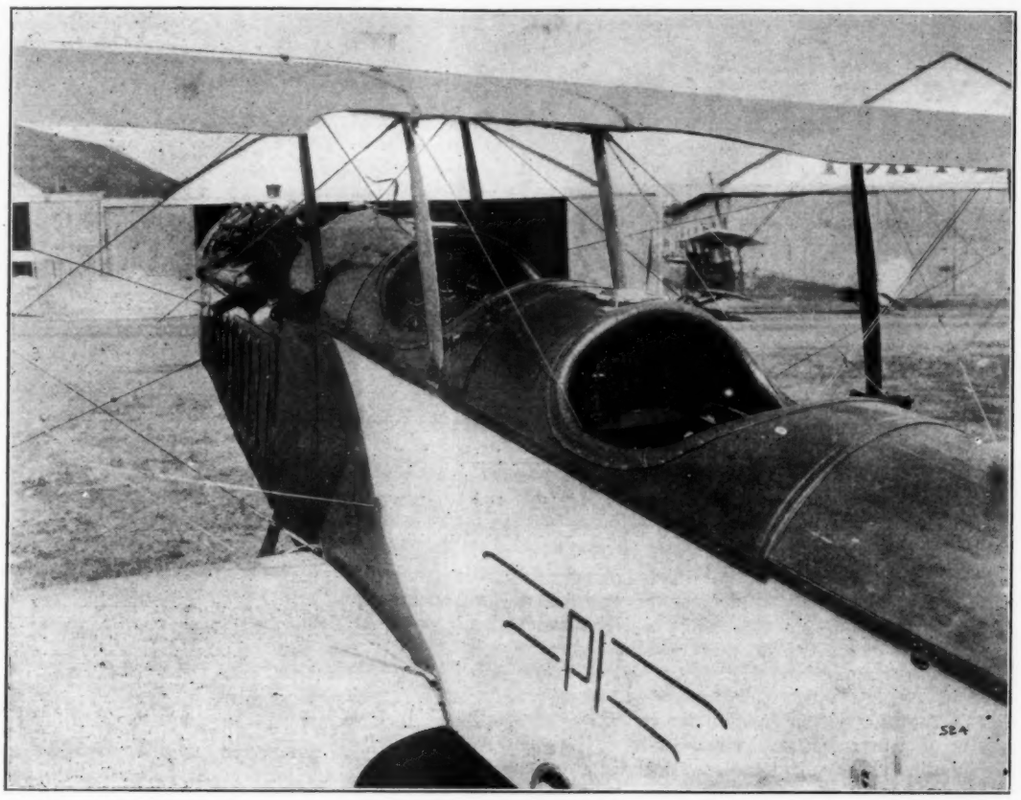
The longerons are of ash, braced with three ply Haskelite walls and plywood bulkheads from the pilot's cockpit to the nose, while struts and wires with doped fabric covering are used from the pilot's cockpit to the tail.

The wings are constructed of wood in conventional truss form, the over hang being braced with steel tubing, streamlined with Balsa wood. The upper wing is made in two main panels and the center section, the lower wing also being in two panels. The center section is built up of two main spars and plywood covering and contains a 42 gal. gasoline tank.

The engine is an 8 cylinder Hispano-Suiza, developing 180 hp. at 1750 r.p.m. The cooling system consists of two side radiators with an expansion tank mounted between the cylinder blocks.

The general details of the plane are as follows:

Span, overall, upper wing	44 ft. 7 in.
Span, overall, lower wing	32 ft.
Height, overall	10 ft. 7 in.
Chord	6 ft.
Gap	6 ft.
Dihedral angle	1 deg.
Sweepback	5 deg.
Stagger	5½ in.
Total wing area, including ailerons	447 sq. ft.
Total weight, fully loaded	2922 lb.
Weight of machine empty, including water	1735 lb.
Pay load	720 lb.
Speed, maximum	92.8 m.p.h.
Speed, cruising	86.0 m.p.h.
Speed, landing	34 m.p.h.
Climb in ten minutes	5,200 ft.
Radius of operation	310 miles
Ceiling	18,000 ft.



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Here you will find a Drafting Room where designs are being prepared for the construction of new experimental models, the Experimental Department (nearly a quarter of our entire plant) where these new models are made, the laboratory where they are tried out preliminary to flight tests, the factory where the instrument will later be put into production and the Test and Inspection Departments which will finally certify to its performance and finish.

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PIONEER INSTRUMENT COMPANY

MAIN OFFICE AND FACTORY BROOKLYN NEW YORK USA

General view of the Lincoln-Standard type LS5 commercial five-seater plane

Travel Air Planes

Among that class of commercial plane which is peculiarly suited to air taxi work or feeder line air mail carrying is the well-known Travel Air OX-5 plane. It is a light weight biplane model of very clean design and constructed along very robust lines. Accommodation for pilot and two passengers is provided in two cockpits. The entrance to the passengers' cockpit is through a door on the port side.

The wings are of conventional design, built entirely of spruce, having laminated spruce spars. Both laminations are routed inside between bolt holes, forming a very strong box spar. The ribs are of spruce lightened between spars and with 3/16 in. grooved cap strips. The compression webs are solid and reinforced with spruce strips on both sides. Trailing edge is ¼ in. steel tubing.

The fuselage is fabric covered and built entirely of welded seamless steel tubing braced with tubing from the passengers' seat forward and with No. 10 steel wire from pilot's seat to sternpost.

Characteristics

Height, overall	8 ft. 6 in.
Length, overall	23 ft. 6 in.
Span, upper wing	33 ft.
Span, lower wing	29 ft.
Chord, upper wing	5 ft. 6 in.
Chord, lower wing	4 ft. 8 in.
Total wing area including ailerons	296 sq. ft.
Weight, empty, with water	1300 lb.
Useful load	750 lb.
Total weight	2050 lb.
Wing loading	6.93 lb./sq. ft.
Power loading	22.77 lb./hp.
Maximum speed	96.5 m.p.h.
Landing speed, full load	38 m.p.h.
Fuel capacity	35 gal.
Factor of safety	8 plus.

This plane has recently been modified slightly and equipped with a Wright Whirlwind radial air-cooled engine of 200 hp. As will be seen in the photograph of the new plane, the landing gear is of new design being of the split-axle type, having a very much wider tread than in the standard machine.

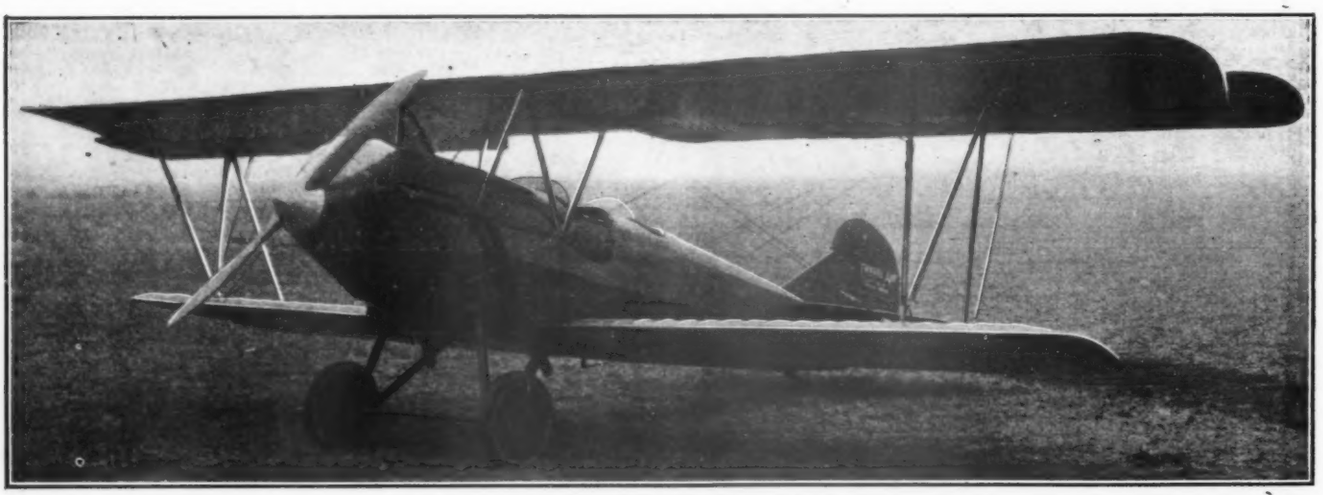
The performance of the machine, equipped with the Whirlwind engine, is as follows:

Speed	130 m.p.h.
Rate of climb, sea level	1,300 ft. per min.
Climb from ground to 6000 ft.	6 min.
Climb to 10,000 ft.	12 min.
Service ceiling	20,000 ft.
Take off 5 m.p.h. wind, pilot and passenger, 50 gal. gasoline	160 ft.
Speed range	38 to 130 m.p.h.

Travel Air Special

The Travel Air Special possesses a great many of the same characteristics as the OX engine model. The fuselage is of welded steel tubing with bracings of tubing and wire. The engine mount, also of steel tubing, is made a detachable unit.

The forward cockpit, entrance to which is made by a convenient door in the fuselage, seats two occupants. This cockpit may be readily converted into an express or mail compartment of twenty-two cubic feet. The pilot's cockpit is



The Travel Air commercial plane

AIRCRAFT SUPPLIES

Special Spring overhaul offers

No. 1 $3.60
1 set 80 OX5 gaskets
1 set 21 hose connections

No. 2 $10.96
Offer No. 1, plus 8 intake valves & springs
8 exhaust valves & springs
8 intake push rod springs

No. 3 $36.08
No. 2, plus 8 pistons & rings
8 piston pins

No. 4 $109.68
No. 3, plus 8 new cylinders
8 connecting rods
1 set connecting bearings

No. 5 $81.78
Same as No. 4, substituting 8 used guaranteed cylinders & studs in place of new cylinders.

No. 6 $71.68
No. 1 & No. 3, plus 8 used A1 guaranteed cylinder assemblies

No. 7 $11.52
1 set water outlets
8 large valve action pins

No. 8 $25.28
No. 7, plus 8 intake yokes. 8 exhaust yokes.
16 small valve action pins
8 medium valve action pins

No. 9 $28.80
1 new D81x2 Berling magneto
1 new Zenith carburetor
1 new water pump

No. 10 $21.00
1 set main bearings. 1 thrust bearing.
1 crankshaft assembly

No. 11 $33.60
1 right Canuck side cowl
1 left Canuck side cowl
1 new Harrison Hex. core radiator

No. 12 $17.85
1 set 4 JN or Canuck landing gear struts, cut to fit
38" shock absorber cord. 1 axle.

No. 13 $3.28
1 gal. dope
1 box 20 assorted pinked edge patches
2 needles & 1 spool lacing thread

No. 14 $8.00
choice of 1 Canuck elevator, or
1 Canuck rudder, or
1 Canuck aileron, all covered

No. 15 $20.00
1 Starr copper tipped Club propeller
2 new Goodyear cord 26 x 4 tires

No. 16 $3.20
1 set OX5 spark plugs
1 set spark plug terminals
1 set ignition wires

No. 17 $3.48
1 prop. hub puller. 1 prop. hub nut wrench.
1 crankshaft nut wrench
1 lb. No. 19 copper safety wire
1 gross 1/16" cotter pins

No. 18 $20.00
1 oak or walnut, copper tipped toothpick propeller
2 slightly used 26 x 4 tires

No articles in the special offers may be substituted by any articles not listed above. Items may be interchanged at a proportionate, corresponding alteration in price. The offers may be added to but not reduced.
No orders accepted unless accompanied by 25% of the purchase price. State preferred means of shipment.
The recent addition of the entire stocks of several prominent aircraft dealers in U. S. and Canada has made these offers possible. The regular list prices on these items will positively prevail after May 15th, 1926

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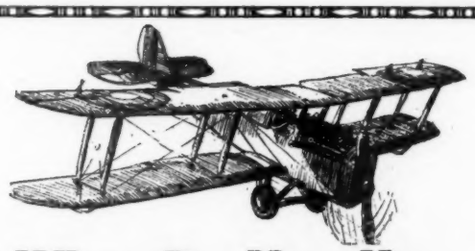

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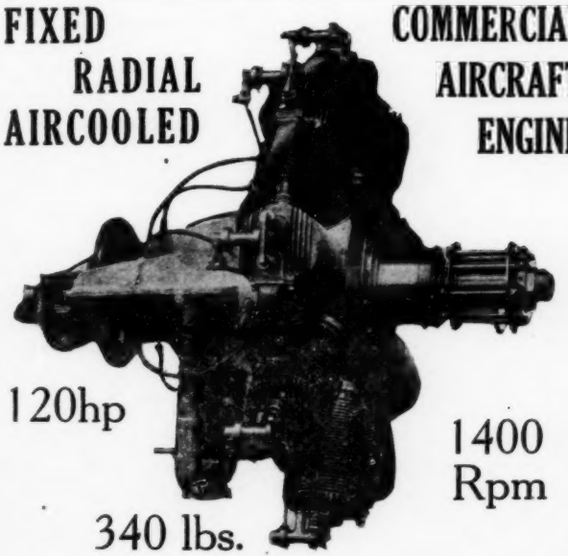

120hp
1400 Rpm
340 lbs.

6½ to 10 gal. gasoline ¾ to 1 gallon mineral oil per hour.

Write For Booklet AV1

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The Travel Air equipped with a Whirlwind engine

in the rear of this compartment. Luggage is disposed in a space located directly back of the pilot's cockpit. A Curtiss C6A engine, well cowled in, serves as the power plant for this special Travel Air machine.

The Travel Air Special

Characteristics

The general characteristics of the Travel Air Special are given in the following table together with the performance:

Span, upper wing	31 ft. 6 in.
Span, lower wing	25 ft. 2 in.
Chord, upper wing	5 ft.
Chord, lower wing	4 ft.
Height	8 ft. 8 in.
Total wing area	240 sq. ft.
Fuel tank capacity	57 gal.
Oil tank capacity	5 gal.
Engine—Curtiss C6A	160 hp. at 1750 r.p.m.
Weight, empty	1460 lb.
Weight—pilot, fuel, oil, accessories	582 lb.
Normal pay load	500 lb.
Gross weight	2542 lb.
Wing loading	10.6 lb. per sq. ft.
Power loading	15.9 lb. per hp.
Maximum speed	120.0 m.p.h.
Landing speed	48.0 m.p.h.
Cruising radius at 100 m.p.h.	5 hr.

The Swallow Commercial and Mail Planes

One of the interesting and valuable planes in the small class of commercial machines made possible very largely by the Curtiss OX-5 engine, is the Swallow commercial three-place machine. This is a very excellent touring and light commercial airplane with a good performance.

The fuselage is of strut and wire construction, having a detachable steel tube engine mounting. The passenger's seat is well upholstered and is 32½ in. wide, giving ample room for two passengers. The radiator is swung below the fuselage, the water temperature being controlled by shutters on the radiator. The aluminum fuel tank is mounted in the fuselage and holds 33 gal. A reserve of 4 gal. gives the pilot half an hour's flying after he has run out of gasoline.

The wings are of conventional design, the spars being laminated and channelled inside, forming a spruce box spar, which is very light and strong. The ribs are reinforced spruce with spruce cap strips.

The elevators and rudder are built entirely of metal, the torsion members are steel tubing with steel ribs and duralumin trailing edge. The stabilizer is built of spruce and is semi-cantilever.

For service on the Elko, Nev.-Pasco, Wash. contract air mail route, to be operated by Walter T. Varney, Swallow mail planes have been purchased from the Swallow Airplane Manufacturing Company. The new mail plane is a modification of the New Swallow, with the forward cockpit covered in and formed into a mail compartment, which is reached from the top by means of a hinged cover on the left hand side.

Herewith are given the major characteristics of the mail plane compared with those of the standard machine already described:

DIMENSION	MAIL PLANE	STANDARD PLANE
Length	24 ft.	24 ft.
Height	8 ft. 8 in.	8 ft. 6 in.
Span, top wing	36 ft.	32 ft.
Span, lower wing	34 ft.	32 ft.
Chord, both wings	5 ft.	5 ft.
Airfoil section	Aeromarine 6 mod.	
Angle of incidence, both wings	2.5 deg.	
Dihedral, top wing	0.5 deg.	
Dihedral, lower wing	3.5 deg.	
Wing area	350 sq. ft.	300 sq. ft.
Area of ailerons	42 sq. ft.	34.8 sq. ft.
Area of elevator	16.6 sq. ft.	16.6 sq ft.
Area of complete stabilizer	21 sq. ft.	21 sq. ft.
Area of rudder	6.8 sq. ft.	6.2 sq. ft.
Area of fin	3.0 sq. ft.	13.5 sq. ft.
Weight with water	1,500 lb.	1,300 lb.
Useful load	1,200 lb.	900 lb.
Total weight	2,700 lb.	2,200 lb.
Wing loading	7.7 lb./sq. ft.	7.3 lb./sq. ft.
Maximum speed	118 m.p.h.	95 m.p.h.
Endurance at full throttle	5 hr.	4 hr.
Distance run for take off with full load	150 ft.	500 ft.
Gasoline capacity	56 gal.	36 gal.

AERONAUTIC SAFETY CODE

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Sponsored by the U. S. Bureau of Standards and Society of Automotive Engineers, and Approved by the American Engineering Standards Committee, October, 1925.

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American Commercial Flying

Mileage Statistics of Commercial Pilots Operating Throughout the Country.

AS THERE has never been a complete list of American commercial pilots with mileage statistics of their operations, AVIATION is compiling a report including details furnished by all the commercial pilots in the country. The public has been led to believe that there is not much flying going on in this country and it is, in part, with a view to rectifying this false impression that this work has been undertaken.

So far, approximately 375 pilots have sent in their statistics and the total mileage of these reports amount to 6,685,055 miles for the year 1925. Since there are many more to be heard from, it is confidently expected that this figure will be greatly exceeded. Below is printed the complete list of these pilots whose reports are already in. It is proposed to supplement this list each week if possible, giving the added statistics as they are received together with the grand total, to date.

Operator	*Miles*	*State Total*
ALABAMA		
Roscoe Turner	25,600	25,600
ARKANSAS		
J. C. Cone	3,600	
Knute Nielsin	1,500	
S. S. Willard	10,000	
Mearle B. Whitman	1,160	
J. Cline	3,500	
G. Hand	20,000	39,760
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Clarence O. Prest	2,000	
A. Cellier, Jr.	12,000	
H. L. Mullen	12,270	
Usher Rausch	....	
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M. DeH. Quinby	....	
Joe E. Crosson	10,000	
D. W. Tomlinson	12,000	
F. W. Farris	12,000	
D. Matthews	18,500	
C. W. English	3,000	
L. M. Balot	12,000	
Dwight Foulding	5,000	
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Earle Ovington	5,000	
F. D. Hoyt	12,000	
Nathan A. Rhine	10,500	
R. T. Gerow	....	
Walter A. Hamilton	5,500	
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Ontario Aircraft Corp.	65,000	
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Ingvald Fogersky	10,000	
Eddie Martin	78,000	
O. P. Harrah	3,000	913,420
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Guy M. Daffson	7,500	
L. D. Leininger	1,600	
Capt. J. H. Cordner	10,000	
Eugene M. Miller	....	
Alexander Aircraft Co.	10,000	39,100
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P. H. Spencer	16,000	
John F. Nixon	5,000	
LeRoy H. Thomson	15,000	
John H. Tweed	8,000	
H. Roscoe Brinton	5,000	
Harry DePew Copland	12,000	86,000
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Wm. K. Willard	3,000	
H. E. Cornell	1,000	
Royce H. Shaw	1,600	
Glen R. Morton	15,000	
W. H. Alexander	16,000	
Charles P. McLain	1,100	
Roy Applegate	10,500	48,500
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Beeler Blevins	10,000	25,000
IDAHO		
M. L. McLeod	7,000	
Harold Graves	30,000	37,000
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E. B. Heath	15,000	
H. W. Hendrick	5,000	
J. W. Rose	10,000	
Michael M. Rubner	5,000	
Michael A. Saffarello	17,895	
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Stanley Wallace	11,500	
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O. F. Linne	30,000	
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H. H. Berryman	1,800	
Hutson Auto Aero Co.	20,000	
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Malcolm H. McHargue	2,000	
Alfred De Los Rios	2,500	
Ernest Ravinet	2,500	
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Hobart Aviation Co.	4,200	
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C. H. Hadges	12,000	
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A. E. Merriam	10,000	
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Clifford Strange	4,080	22,380
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Marion Burke	600	
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New German Air Lines Planned

An extensive program of new air lines has been mapped out by "Lufthansa", the new German air transport company, the result of the recent combine of Germany's two chief air transport companies, Aero Lloyd and Junkers. The plans are said to include lines from Berlin to Paris, to Madrid and to Lisbon; from Munich to Lyon; from Capetown to Johannesburg and to Durban; from Teheran to Enseli, to Bendir-Buschir and to Kanikin and from Moscow to Vladivostok.

Many of these lines lie wholly outside German territory, one falling within the British Empire and another in Persia. The former is said in Berlin to be on the verge of definite enactment through contract, whereby, for a trial period, the German Junkers Co. (now part of the "Lufthansa") will establish two commercial lines out of Capetown.

It is reported in Germany that the German company is to be subsidized by the Persian Government, receiving 11½ shillings for every kilometer flown in Persia during the first eight months and a flat sum of £500 per month, thereafter. In return, three lines are to be established, one from Teheran to the Caspian Sea, another from Teheran to the Persian Gulf, and the last from Teheran to the frontier of Mesopotamia. At least one of the three, probably that to Enseli on the Caspian, is to have connections with European air routes, according to reports.

Two projects in France are also said to be under consideration. Any agreement which would grant to both Germany and France the right to fly over and across each other's territory would mean for France the shortest and most direct access to Prague and Warsaw, and for Germany across to the Rhineland, Spain, Portugal, and perhaps South America.

Fuel Injection For Engines

A report, entitled, "An Investigation of the Coefficient of Discharge of Liquids Through Small Round Orifices", by W. F. Joachim, has recently been published by the National Advisory Committee for Aeronautics.

The work covered by this report was undertaken in connection with a general investigation of fuel injection engine principles as applied to engines for aircraft propulsion, the specific purpose being to obtain information on the coefficient of discharge of small round orifices suitable for use as fuel injection nozzles.

Flow of the liquids tested under high pressure was obtained with an intensifier consisting of a 5 in. piston driving a direct connected ¾ in. hydraulic plunger. The large piston was operated by compressed air and the time required for the displacement of a definite volume by the hydraulic plunger was measured with an electrically operated stop watch. The coefficients were determined as the ratio of the actual to the theoretical rate of flow where the theoretical flow was obtained by the usual simple formula for the discharge of liquids through orifices.

Values for the coefficient were determined for the more important conditions of engine service such as discharge under pressures up to 8,000 lb. per sq. in., at temperatures between 80 deg. Fahr. and 180 deg. Fahr., and into air compressed to pressures up to 1,000 lb. per sq. in. The results show that the coefficient ranges between 0.62 and 0.88 for the different test conditions between 1,000 and 8,000 lb. per sq. in. hydraulic pressure. At lower pressures, the coefficient increases materially.

It is concluded that, within the range of these tests and for hydraulic pressures above 1,000 lb. per sq. in., the coefficient does not change materially with pressure or temperature; that it depends considerably upon the liquid, decreases with increase in orifice size, and increases in the case of discharge into compressed air until the compressed-air pressure equals approximately three-tenths of the hydraulic pressure, beyond which pressure ratio it remains practically constant.

A copy of report No. 224 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D.C.

ALL METAL

Planes and Parts

CONTROL SURFACES; sometimes look as tho they were manufactured by the mile and chopped off in lengths to suit; in other cases they have clean, graceful outlines. The first kind are said to be cheaper and they surely look it; said also to be more interchangeable, but that is less obvious.

GOOD LOOKS, are less important than strength and light weight but when you can have all three at no more expense why not include beauty?

OUR TAIL PLANES have carried up to 157 pounds per square foot under sand load test, and while able to deliver all the control you can apply them, their weight complete is only three-quarters pound per square foot. Also our rib dies are adjustable to blank and press control surface ribs of various lengths ranging from those of a single seater to a large transport ship, and so, it is as easy to taper the outlines as it is to build them square.

Our special equipment for stamped or drawn metal parts and license under my patents should interest you if you build planes. Our airplanes or sea planes will serve you well if you fly.

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To the Editor, AVIATION.

We have in the last few months received several hundred letters from young men all over the country regarding our courses in Aeronautical Engineering. These inquiries often come from pilots, operators, mechanics and others already employed in aviation who wish to increase their technical knowledge of the subject. Many of these inquiries come from readers of your valuable publication, and we should like to help these young men by a brief statement.

We offer a four year undergraduate course leading to a degree, to which students are admitted by high school certificate or by entrance examination.

We also offer a one year postgraduate course leading to a higher degree and open to graduates of engineering colleges.

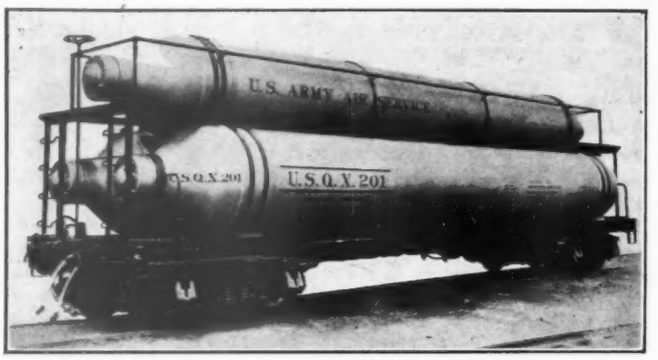
Students who have had aircraft experience and are over twenty-one years of age, and who do not wish to take the regular four years course leading to a degree, may be admitted readily as *special* students in Aeronautical Engineering. They cannot, however, be admitted directly to the courses in Aeronautics unless they have had a fair training in mathematics and applied mechanics. Our invariable advice to such applicants is, therefore, that they should take two years of study at the University; one year in mathematics and applied mechanics, and the second year in their specialized aeronautical subjects. Without the fundamental knowledge of mathematics and applied mechanics, students would find their professional work useless to them.

The University does not offer instruction in flying, although students are encouraged to take up flying during the Summer vacations with private flying schools, or by joining the U. S. Naval Air Service Reserve.

ALEXANDER KLEMIN,
Daniel Guggenheim School of Aeronautics,
New York University

New Helium Transportation Tanks

Due to the need of better facilities for transporting helium gas from the plant to airdromes, the Army Air Service asked the Bethlehem Steel Co. several months ago, to construct a gas carrying unit. The result was a tank car composed of three large cylinders. The cylinders will hold a total of 206,000 cu. ft. of helium under extremely high pressure, sufficient to inflate any ordinary sized blimp.



The Helium Railroad Tank

Before the development of this tank car, helium gas was carried in small cylinders, 1200 of which were necessary to inflate an airship of 210,000 cu. ft. capacity. Also, in emptying the small cylinders, about 15% of the gas was lost through leakage. The development of the large tanks has not only reduced this waste, but also cuts down the amount of work necessary in tapping so many small cylinders.

In time of war, these gas unit cars could be shipped around with great ease, and the fact that one car of gas will fill one airship makes the advantage very great.

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AIRPORTS AND AIRWAYS

Santa Barbara, Calif.

By Earle Ovington

The Santa Barbara Aero Club is entering upon its third year with unabated enthusiasm. To be sure, we have nothing but Jennies but we certainly overwork these old crates. Dave Matthews, our vice-commodore, is our professional pilot and he hops passengers as fast as he can load and unload them on Saturdays and Sundays, and, less frequently on weekdays. I sometimes lift them into the cockpit when they are particularly pretty. Which reminds me that there are disadvantages to these new planes which have a door leading to the passenger's cockpit!

Dr. J. Bert Saxby, Jr., hopped up to Crissy Field, San Francisco, last week to see a friend of his.

Dwight Faulding, who is our official photographer, snapped some fine oblique pictures of the polo games when Santa Barbara won the Pacific Coast championship. Which reminds me, Dwight went on a cross-country trip of over eighty miles after he had soloed less than two hours.

Yours Truly has sold his "Old Reliable" and looks forward to a new plane pretty soon. A snappy-looking, rapid-climbing sportplane for two is the ideal but a three-place freight-carrier will have to do as that is all the market affords at present.

Santa Barbara is working hard for an airport. At least, the Club members are. We seem to be the only ones in town who are aware of the fact that commercial aviation has been given the gun. Our Chamber of Commerce is just showing signs of coming out of its comatose condition, but Mr. Business Man is still in the fifteenth century so far as aviation and the necessity of a landing field here is concerned.

Our present "airport" is nothing to brag about. In one case, on the takeoff, you are over a subdivision which I am trying to build up, and in the other case, over a fine and extensive orchard of full-grown walnut trees. If you get reckless and take off cross-field, the Samarkand Hotel confronts you a couple of thousand feet away. Fortunately for us, not an OX-5 has laid down on us on the takeoff since we started our club. If we had had anything but OX-5s we would have all been thumbing harps ere now!

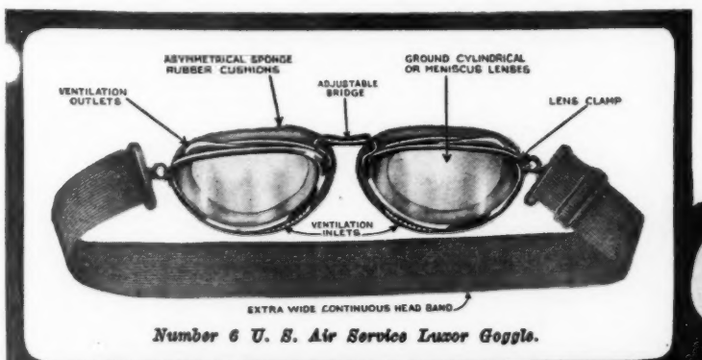
Next week we hop down to Ventura where the Ventura Aero Club is giving us a barbecue. Interclub barbecue-giving, by the way, is a great scheme. One month we give the Ventura boys a barbecue and the next month they give us one. Jennies serve as ferries. No, we only bring our guests to these feasts by air—the refreshments are made nearby!

P.S. I wish more of my old flying friends of 1911 would drop me a line, and tell me where they are. I've heard from quite a few but not from others I know who are still on deck. If I knew where they were I'd write them, but I don't. I'm glad I'm still on the job. Fifteen years has only sharpened my interest in the king of sports.

Chicago, Ill.

By Otto Klein

Spring has arrived in Chicago not only in name, but in person. Sudden warmth and sunshine has spread over our smoke screened city; but, while the blue sky proves inviting



Number 6 U. S. Air Service Luxor Goggle.

Luxor Goggles

The LUXOR No. 6 U.S. Air Service Goggle is our latest, made especially for the U. S. Air Service. Providing an unobstructed field of vision, comfortable face-fitting rubber cushions that permit continuous wearing without irritation. Fogging and steaming of lenses prevented by ventilators with dustproof inlets. Adjustable bridge insures fit and face comfort. Lenses held in place by special instantly locked metal rim, permitting quick replacement. Light metal construction and flanged eyecup rim prevent possibility of cutting face in case of accident. Extra wide continuous head band. *Meyrowitz Luxor Goggles* can be fitted with prescription lenses, white or tinted. Many prominent pilots wear Meyrowitz Goggles with corrected lenses.

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to the flier, the soft ground underneath makes flying almost impossible. A number of attempts were made to get off during the last week, but the machines sunk deeper and deeper in the mud and were, with difficulty, pushed back.

Many planes are being built or overhauled. The Heath Airplane Co. is building up one OX-5 Standard and rebuilding a Jennie and their "Favorite", which was taken down for the winter. The "Favorite" will emerge this year with a modern streamlined nose, which may add a few miles to its speed and will undoubtedly make it more attractive in appearance. The Heath company has, at this time, over twenty students and has many more enrollments on file for the coming months.

Elmer Partridge and "Pop" Keller are busy installing Whirlwind engines in the machines which they are preparing for the new Chicago-Minneapolis mail route. R. C. Mossman is getting equipment in shape and will start operating on his 97th St. & Western Avenue field in the next few weeks.

Normand T. Sorenson, a student of the Heath Airplane Co., purchased an OX-5 Standard in Anglum, Mo., and, in company with Clifford Condit, another student, flew the plane back to Chicago. Condit has been doing some instructing for the Chicago Flying Club lately. He is a very competent pilot and has recently performed the tests for his F.A.I. license.

Chicago pilots would like to hear from Roy Ahearn, Chicago, young daredevil flier, who went to Florida to first fall in love and then fall in the ocean. Cupid froze on the controls, methinks.

Chicago-New York in 4 Hrs. 35 Min.

On the night of March 17-18, Air Mail pilots George Myers and Earl Ward established a new record for the Chicago-New York run by covering the 726 miles in 4 hr. 35 min. or at at an average speed of 158 m.p.h.

Pilot Myers flew his plane from Chicago to Cleveland in 2 hr. 5 min. Pilot Ward then took the plane from Cleveland to New York in 2 hr. 30 min.

The best previous time made from Chicago to Cleveland was 5 hr. 24 min. made several weeks ago. The scheduled time for covering this route is 7 hr. 30 min.

Pinehurst, N.C.

Lloyd O. Yost recently returned from delivering a new Waco nine to the Brevard Aero Corp. at Brevard, N.C. Brevard is 2600 ft. above sea level. The corporation intends using the Waco for extensive mapping, aerial photography, etc. They have a good field with a hangar 30 ft. by 50 ft. and business men of Brevard are solidly behind the concern.

Wichita Municipal Field

By Walter H. Beech

The Wichita Municipal Field is gradually assuming better form, and we have also under construction two more hangars by Mr. Ed. White, commercial operator, Wichita, Kan.

Everyone here was very glad to see Mr. E. P. Lott and Mr. Fatt, of the N.A.T., on their first run with the Pigeon. Some radiator trouble was encountered a short way from Wichita, but was quickly repaired by the efficient repair department of the Travel Air Mfg. Co., Inc.

Mr. Howell, one of the largest oil operators in Wichita, during the last two weeks of nice weather, has been making numerous trips to the oil fields with his J-4 Travel Air, also several trips have been made with his OXX-6 Travel Air. These machines are used by Mr. Howell for inspection purposes in the oil fields. They also supply urgent wants to the drillers in case of breakdown of small tools.

The Winstead Bros. Repair Depot, seems to be very busy and they claim to have several months work ahead.

The Travel Air, Inc., is very busy assembling planes and

AIRPLANES FOR SALE

We sold over $110,000.00 worth of airplanes, motors and parts last year and still have a large number for sale. We believe the prices on airplanes are at their lowest, and a small deposit on any of our airplanes will hold same for spring delivery. We expect a sharp advance in prices very soon.

We still have plenty of Standards, Jennies, Canucks, Orioles, D.H.'s with Liberty motors, Spads less motors, T.M. Scouts with and without motors. A large number of these airplanes are set up, test flown, and ready for immediate fly away delivery. Come and take your pick.

NEW STANDARD J-1 AIRPLANES with guaranteed overhauled Hispano-Suiza motors, 150 H.P. $1500.00
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NEW STANDARD J-1 AIRPLANES with Government overhauled OX5 motors 900.00
NEW STANDARD J-1 AIRPLANES without motor 650.00

These airplanes come complete with tools and instruments and the front seat is built so as to accommodate two passengers. These airplanes have been reconstructed and new longerons, new controls, new wires, new struts, new fittings, new instruments were installed where needed. One-third deposit will hold any of the above airplanes for spring delivery, storage and insurance free.

No bond required
No charge for breakage

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We guarantee to solo our students regardless of the number of flying hours required. We also furnish planes at very reasonable rates for those who wish to qualify for the F.A.I. pilots certificate and we maintain an employment agency for our graduate pilots.

The flying school of the Robertson Aircraft Corporation is one of the oldest and best known in the United States. Our instructors are ex-army aviators and are mail pilots with wide experience and our training equipment is the best obtainable. In over eight years of operation our students have never damaged a ship in their solo flights.

The flying field is approximately six miles from St. Louis and is easily accessible by railroad, street car and hard surfaced roads. It is the largest and best privately owned field in the country and the International Races of 1923 were held there. Mail planes arrive and leave daily.

Our course requires about two weeks, depending on the individual, and after its completion the refinements of the art can be gained only from experience. Commercial aviation is a rapidly growing industry. Don't delay! Enroll now!

WRITE FOR BOOKLET

It is not necessary to purchase an airplane in order to take this course.

ROBERTSON AIRCRAFT CORPORATION

OPERATORS OF UNITED STATES AIR MAIL ST. LOUIS-CHICAGO

LAMBERT-ST. LOUIS FLYING FIELD, ANGLUM, MO.

each week Pilot Clark, the field manager, is sending out these planes to their different destinations over the United States.

The Swallow Airplane Co., is also very busy and it seems to be a race between them and Travel Air, as to who will build and deliver the most airplanes.

Detroit, Mich.

By Leslie S. Gillette

While important events on the ground constitute a major portion of the current news, there has been considerable activity in the air in spite of unfavorable weather. During the past three weeks, Eddie Stinson has flown more than 5,000 miles and carried in excess of 500 passengers in his new "Stinson-Detroiter" plane, while demonstrating the machine to important local, national and foreign representatives. His hangar and operation base is at Selfridge Field.

Alfred Verville's folding wing OX5 plane has been flying regularly except for a few days when it was returned to the plant for the fitting of dual control.

In addition to their daily 8:30 a.m. formation drills and gunnery practice, the pilots of the First Pursuit Group at Selfridge Field have been busily employed searching for automobiles which supposedly have been thought to have fallen through the now softening ice on the lakes and attending to other sundry patrols at the request of the State Police. It would be interesting to know the nature of the many valuable flights that have been made by the Selfridge Field fliers for the welfare of the local community.

Announcement was made on March 14, by the Directors of the Aircraft Development Corp., of the establishment of a 600 acre airport on Grosse Ile. This island is about a fifty minute drive by automobile from the center of the city but it is planned to make connection between the airport and the downtown part of the city by fast cabin cruisers which will make the river trip in less than 30 min. This field will be larger than the Croydon airport in England or the Le Bourget field near Paris, and, in addition, it will offer anchorage for seaplanes and lighter-than-air craft. Practically all drainage has been completed on the new field and it is planned to have the airport ready as a test field and landing ground early this spring. The runway is more than a mile long in the direction of the prevailing winds, while there is a 4,000 ft. run the other way.

Both Detroit firms and outside manufacturers are to accept stock interests and, included in the non-resident companies considering the plan, are the Curtiss Company, Glenn Martin Co. and the Vought Company, according to Carl B. Fritchie, general manager of the Aircraft Development Co. Numerous prominent Detroiters are interested in the project as are several leading banks. The property was formerly owned by R. E. Olds of the Olds Automobile Co. and already $250,000 have been raised for the project. The working capital will require $8,000,000.

The proposed National Guard Squadron for Michigan will use the Grosse Ile airport and free hangar space will be given. It is expected that the Guard squadron will get into the air late this summer and the majority of the personnel of 55 enlisted men and 31 officers will be drawn from members of the Detroit Flying Club. This organization has been very active in fostering the development of the Guard and details will be discussed at the next meeting for perfecting plans. The regular weekly luncheons and bi-monthly meetings of the Detroit Flying Club will be held in the Book-Cadillac Hotel instead of at the former rooms in the Union League Building.

Another event of importance was the contest for the awarding of the William B. Stout trophy to the school whose representitive model airplane attained the greatest duration. Inter-school contests were held in the auditorium of the Cass Technical High School before approximately 800 spectators. The boys, whose model planes were competing for the trophy, were selected from some 1,300 model airplanes which have been built by the school children of Detroit. These figures are sufficient to show the interest in aviation that is being shown in the city by Juniors.

Jack Laughran was the winner of both events, his duration

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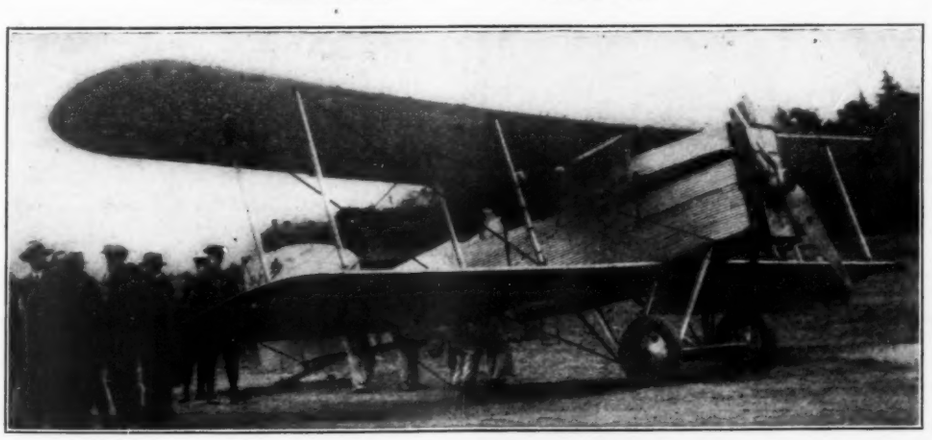

Yackey Transport which accompanied the Stirling Expedition to Dutch New Guinea

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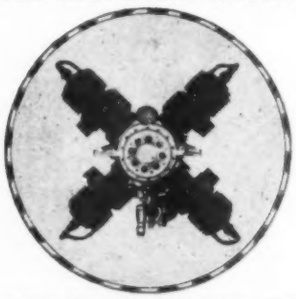

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times being: tractor model, 115 sec.; pusher model, 73.5 sec. The time for the second place winning machine was 70 sec. In addition to several prizes awarded by the local stores, Laughran was given two junior memberships in the Detroit Flying Club. Judges of the contests consisted of well known figures in the aviation industry including William B. Stout, Alfred Verville, George W. Hopkins and Maj. R. W. Schroeder. It may be of interest that over 1,000 model airplane kits were sold to Detroit School boys within two days.

Lansing's new field is quickly being put into shape by the efforts of the State Governor and considerable aerial activity is expected between the State Capitol and the other large Michigan cities. Ted Abrams, secretary of the Michigan Commercial Pilots Association is the most active field agent in the State and was down looking over the new field carefully recently.

United States Air Forces

The Douglas O-2 Squadron

All Douglas O-2 airplanes at Kelly Field belonging to the 10th School Group were assigned to the 43rd School Squadron recently. This squadron will henceforth be an O-2 squadron.

While on the subject of the O-2 airplane, which is manufactured by the Douglas Company at Santa Monica, Calif., and which is now being distributed throughout the entire Air Service in this country, it may be stated that the delivery of these planes to various destinations involves no expense to the Government for freight charges. An Air Service field desiring to obtain its allotted share of O-2's sends a number of pilots across the continent by air, either in a Martin Bomber or a Douglas Transport, and the new ships are flown back. This method not only saves considerable time but also tends to economy in the operating expenses of the Air Service, as thousands of dollars are saved that would otherwise be expended for packing, crating and shipping the airplanes by rail across the continent. Shipping airplanes by rail involves great delay. It takes several weeks for a freight shipment from the Pacific Coast to reach an eastern station. More time is spent in unpacking the shipments, assembling the planes and flight testing them before they are put into actual use.

Under the system now in vogue the planes are assembled at the Douglas factory, flown to their various destinations and are ready to be put into immediate operation, besides affording the pilots ferrying these machines excellent cross-country flying practice.

The Air Service is about the only branch of the Army which is able to act as its own transporting agency.

Elimination of Bidding

By a vote of 10 to 9, the House Military Affairs Committee in executive session on March 19, voted to include in its forthcoming Army Air Service bill, clauses suspending for 10 years regulations requiring competitive bidding for contracts to furnish aviation equipment.

This provision, one of the major recommendations of the Morrow Aircraft Board named by President Coolidge, is designed to facilitate the purchase of planes and equipment by the Army as well as to afford a larger measure of protection to manufacturers supplying the service.

New Primary Flying Class at Brooks Field

The new primary flying training class at Brooks Field, San Antonio, Texas, starting the middle of March, will number 20 officers and 180 cadets. Plans have already been made to take care of the reporting of the cadets with as much quickness and dispatch as possible. Among the new students to take training in the new class will be eight Cubans, one of

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them being an officer in the Cuban Army and the other seven Cuban flying cadets.

In view of the fact that the old stock of JN6H planes will soon be all gone, either salvaged or sent to other fields, it is the intention to start the new March class in on the new primary training plane, the PT-1, thus ending the day of "Jenny" training at Brooks Field.

Six pilots from Brooks Field ferried JN6H training planes to Little Rock, Ark., to be used there by the National Guard for training purposes. In the near future Lieutenant McKinnon will take an AT-1 to Baltimore, Md. The trip to Little Rock was successful, although it was necessary to gas the planes quite frequently.

Six National Guard officers also reported at Brooks Field to take the primary flying course, their training to start immediately.

New Planes For the First Pursuit Group

The First Pursuit Group at Selfridge Field, Mt. Clemens, Mich., always welcoming innovations and improvements, even experiments, anxiously awaits the arrival of the new P-2 pursuit plane, sister of the P-1, with the new 550 hp. Curtiss engine, type V-1400. A new training two-seater, the Curtiss O-1, also equipped with the new V-1400 is expected to arrive shortly.

Wheeler Field Gets Amphibian

The Engineering Department at Wheeler Field, Schofield Barracks, T.H., which is in charge of 1st Lieut. Jack J. O'Connell, recently turned over to the 4th Observation Squadron for operation a Loening Amphibian. Due consideration must be given to those officers who made possible the final assembling of this land-water aircraft from the crates and its successful test flight by their entirely voluntary capacity as advisers to the Engineering Officer, namely, 1st Lieuts. George W. McEntire and Clarence P. Talbot, A.S.

The Amphibian performs exceptionally well on Wheeler Field, and it is proving to be as good a water plane as it is a land plane. The Squadron will make much good use of "Ammy", as 1st Lieut. E. S. Davis has named it, in observation work for the Coast Artillery and for inter-island flights. In this country where so many flights over the water are necessary and where in the event of forced landings the pilot would in most cases head for the water, the 4th Observation Squadron could use more airplanes of this type most effectively.

Photographing Proposed National Parks

One of the most important and responsible missions assigned to the 2nd Photo Section, Air Service, Langley Field, Va., by the Chief of Air Service, is the taking of aerial photographs or, in a near term, mosaics of the proposed Shenandoah and Great Smoky Mountain National Park projects. To the outsiders the taking of these pictures up in the air, say 15,000 ft., is a matter of clicking the camera. This is true, but it requires more than the proper clicking of the shutters. First, there is the pilot who must be proficient not only in aerial navigation but also in aerial photography; second, there is the observer, a photographer, who takes the pictures by means of the aerial camera. He must also be proficient in the handling of his work. The Fairchild Aerial Camera, K-3, is mostly used by this Section.

Catapults For Six Battleships

An additional appropriation of $1,350,000 to install on the battleships New York, Texas, Florida, Utah, Arkansas and Wyoming catapults and other equipment for launching and handling airplanes, additional protection against submarine attack, air attack, deck protection and to effect conversion to oil burning, is authorized in a bill agreed upon by the House Naval Affairs Committee March 18.

The proposed appropriation is supplemental to previous authorizations for modernizing the ships and it is stipulated that the total cost, including the new appropriation, shall not exceed $19,710,000. The bill was ordered redrafted and clarified by Representative Miller, Seattle, Wash. (Rep.), a

BRAND NEW JENNIES, original crates, perfect condition.$1500.00
New Jennies, uncrated for storage, excellent condition .. 1250.00
Very slightly used Jennies, splendid condition throughout. 1000.00
Used Jennies, ship and motor in good condition $650.00 to 800.00

Canucks, Standards, (three and five place), and Thomas Morse Scouts. Parts, accessories, motors, wings, dope and supplies.

Exclusive agents for STUART HIGH LIFT WINGS, *for* Standards, JN4s, or Canucks. *Write for information.*

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OUR SHOCK ABSORBER CORD

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The Alexander Eaglerock

Features reserve power with ox5 motor, quick take-off, slow landing and ease of control. Practically non-stalling with no tendency to spin Ideal for instruction.

PRICE—$2475 ON THE FIELD, DENVER

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member of the committee, who will have charge of the measure on the floor.

Rear Admiral Beuret has said that the Navy would like to begin the equipment of catapults on the Texas, Florida and Arkansas about May 1. He has pointed out the antiquated method of launching airplanes now by dropping them overboard and how the ships would have to be altered in certain particulars to adopt the more modern methods of shipboard catapulting. He described the mechanism of the catapults, which was made confidential.

Navy Air Orders

Lieut. Stuart J. Trowbridge (MC) det. Nav. A. Sta., San Diego, Calif., to U.S.S. Langley.

Ch. Gun. William H. Hughes det. Nav. Air Sta., San Diego, Calif., to U.S.S. Altair.

Lieut. John H. Campman det. 13th Nav. Dist. Com. Nav. A. S. Sta., Sand Point, Wash.

Ens. Ralph J. Arnold det. Nav. Air Sta., Pensacola, to U.S.S. Brazos.

Comdr. Eugene H. Tricou det. Nav. Supply Dep., N.O.B., San Diego, to Nav. A. Sta., San Diego.

Lieut. Comdr. John F. O'Mara (SC) det. Nav. A. Sta., San Diego, to c.f.o., U.S.S. Saratoga.

Lieut. Comdr. Deane H. Vance (MC) det. Army Sch. of Aviation Med., Mitchel Field, to Nav. A. Sta., N.O.B., Hampton Roads.

Lieut. Rex H. White (MC) det. Army Sch. of Aviation Med., Mitchel Field, to Nav. Trg. Sta., Great Lakes.

Lieut. (jg) Clifton A. Young (MC) det. Army Sch. of Aviation Med., Mitchel Field, to Nav. Hosp., Boston.

Ch. Pay Clk. Louie L. Lindenmayer det. Nav. A. Sta., San Diego, to U.S.S. Procyon.

Lieut. Comdr. Earl W. Spencer, upon completion of refresher course, to Nav. A. Sta., Pensacola, for duty.

Lieut. Carl J. Robertson (MC) det. Nav. A. Sta., N.O.B., Hampton Roads, to Nav. Hosp., New York.

Army Air Orders

Sec. Lieut. William Frank Steer, A.S., transferred to Coast Art. Corps. Lieutenant Steer is relieved from duty with 2nd Div., Fort Sam Houston, and is assigned to 13th Coast Art., harbor defences, Pensacola.

Sec. Lieut. Louis French Dorsey, A.S. Res., Washington, to active duty Fairfield, reverting to inactive status May 2.

Sec. Lieut. Charles Arthur Bassett, A.S. Res., Bay City, to active duty Selfridge Field, reverting to inactive status June 26.

Capt. Cecil Grey Sellers and Sec. Lieut. Earl Kenneth Parker, A.S. Res., Denver, to active duty Langley Field, reverting to inactive status June 26th.

Sec. Lieut. Dixon McCarty Allison, A.S., New York and Sec. Lieut. Victor Emanual Nelson, Brooklyn, to active duty, Langley Field, reverting to inactive status June 27.

First Lieut. George Pryor Johnson, A.S., promoted to rank of Captain, remaining in present duty.

First Lieut. Karl DEV Fastenau, A.S., Phillips Field, to Chanute Field.

Maj. Frederick Charles Bahr, A.S. Res., Minneapolis, to active duty Washington, reverting to inactive status April 11.

First Lieut. James Haller Ward, A.S. Res., Natchez, to active duty Langley Field, reverting to inactive status June 12.

First Lieut. Francis Cornelius Crowley, A.S. Res., Dorchester, Mass., to active duty Selfridge Field, reverting to inactive status November 21.

First Lieut. Alfred L. Puryear, A.S., Langley Field, to Scott Field.

Marine Corps Air Orders

Maj. J. Dixon det. MB, N. A. S., Lakehurst, to headquarters Marine Corps., Washington.

Maj. A. Racicot det. MB, Faris Island, S.C., to MB, N. A. S., Lakehurst.

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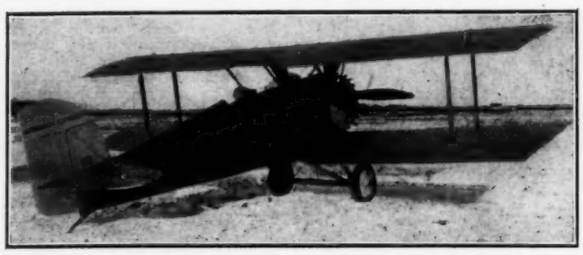
Type 2-A Four Place



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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, of AVIATION published weekly at Highland, New York, for April 1, 1926.

State of New York } ss.
County of New York }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared George Newbold, who, having been duly sworn according to law, deposes and says that he is the Business Manager of AVIATION and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Gardner Publishing Company, Inc., Highland, New York; Editor, W. Laurence LePage, 225 Fourth Avenue, New York City; Managing Editor, none; Business Manager, George Newbold, 225 Fourth Avenue, New York City.

2. That the owner is: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.)

Gardner Publishing Company, Inc., Lester D. Gardner, 225 Fourth Avenue, New York City; Earl D. Osborn, 225 Fourth Avenue, New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of the total amount of bonds, mortgages, or other securities are:

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4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

George Newbold, Business Manager,

Sworn to and subscribed before me this 23rd day of March 1927

[Seal.] GUSTAVE GUTH.

(My commission expires March 30, 1926.)

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PUBLISHER'S NEWS LETTER

It is one of the best signs that a publisher can see when he receives a constructive criticism. Such a view was expressed recently by a subscriber who complains that we have not given anti-aircraft a fair hearing. Here is what he writes:

"It is sincerely to be hoped by many friends of AVIATION that the editorial staff will pull up abreast of the times this year and not repeat their comments of last summer and spring on the anti-aircraft situation.

"To say that the unrest in the ranks of the fliers is partly due to the fact that they are forced to tow target for the anti-aircraft forces is to be ignorant of and unjust to that splendid group of pilots who towed for the First Corps of Cadets at Terry last summer, getting up at 5 a.m., so as to report on time and saying, 'Use me all you want, the Air Service wants to help'. Or the mechanic who held onto his towing cable with his bare hands for two hours when the brake commenced slipping, so that upon his return he required medical treatment.

"The editor who would write such *bosh* would say that it is useless for the infantry to fire at known distance targets under favorable circumstances so as to become slowly used to the more difficult handling of their weapons.

"And to say that anti-aircraft service is futile is to be ignorant of the 58 planes which the two American machine gun battallions brought down in the last two months of the War—a fact little known and never mentioned; it is to be ignorant of the fact that one out of every three enemy planes brought down in the War were by fire from the ground; it is to assume that we can always have planes in the air when and where the enemy chooses to strike; it is to announce that the present comment on the 5 in. armament of the American battleships and the British concern over it is on a subject of no value.

"Certainly ill advised and partisan comment on the part of AVIATION cannot produce satisfaction on your part if it tends to retard the development of this newest, most interesting, and potentially important branch of our service."

The brickbat is welcomed and it is hoped that it will not leave a serious bump where it hits.

* * * *

The matter of circulation is constantly being discussed by our well wishers. They cannot understand why we fear the growth of non-productive readers. A recent advertisement will illustrate this point clearly, we hope. In the railway field there are several trade papers. *The Railway Age*, for instance, has a circulation of 9,730 and is a leader in its field. *The Railway Mechanical Engineer* has 7,772 subscribers. Others in the same field have a subscription list as low as 1,998 and 4,949. One group of five railway trade papers that claims to cover the broad railway field has a total of 33,452 net paid circulation. The reason for this obviously small distribution is that the modern conception of a trade paper is based on the purchasing power of its readers. Readers with only a general interest are not only not sought but refused when possible. AVIATION with over eight thousand weekly circulation or 33,000 a month covers the purchasing power of the aeronautical field and for this reason the advertiser with something to sell finds his best sales force in these columns. In seeking to serve the aircraft field, this has been the dominating thought. And the ten year growth of the paper has demonstrated the soundness of the policy.

* * * *

Occasionally a story comes to us that has a value apart from its humor. Such a tale was sent to us recently. In the early days of flying, Glenn Curtiss had, as his "good man Friday", Al Engel who later became an airplane manufacturer himself. When Curtiss planned to fly down the Hudson for the $10,000.00 prize offered by the *New York World* he made a very careful study of the places where he might land in case of trouble. He also wanted a place where he might make a landing for gas and oil. On a preparatory motor trip down from Albany, Glenn and Al sighted what looked like an ideal landing field near a large group of buildings. On entering the grounds both men became embarrassed and hesitated to tell what they wanted to use the grounds for. After a long wait, one of the attendants asked the purpose of their visit. Curtiss said they wanted to land an airplane nearby and gas-up; that they would harm nothing, not even a blade of grass and that all cans would be removed, leaving the place perfectly policed. The attendant thought over the request and, after a significant silence, asked them if they were serious about flying from Albany to New York. When assured that they were confident of success they heard the verdict. "Well, I suppose ye'll be stoppin' here someday, so you might as well stop now".

It was the Matteawan Hospital for the Insane.

—L.D.G.

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